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MACHINERY'S DATA SHEETS

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No. 2

Screws, Bolts and Nuts

PRICE 25 CENTS

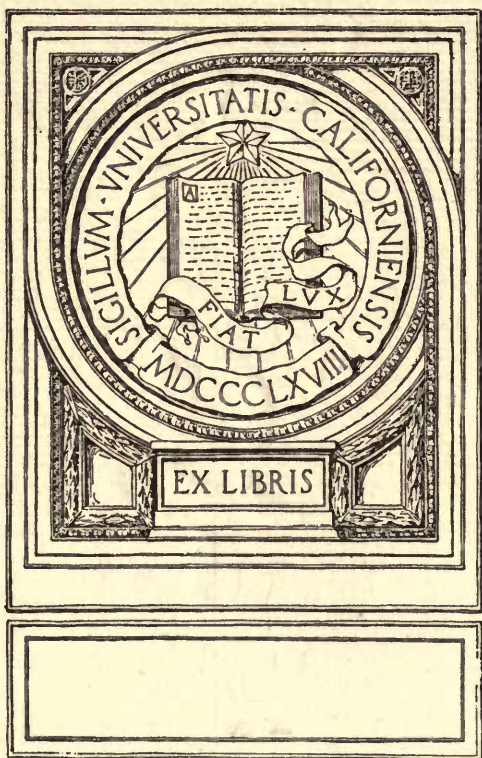
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MACHINERY'S DATA SHEET SERIES

COMPILED FROM MACHINERY'S MONTHLY DATA
SHEETS AND ARRANGED WITH
EXPLANATORY NOTES

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In the following pages are compiled a number of concise tables relating to screws, bolts and nuts, carefully selected from MACHINERY's monthly Data Sheets, issued as supplements to the Engineering and Railway editions of MACHINERY since September, 1898.

In order to enhance the value of the tables, brief explanatory notes have been provided where necessary. In these notes references are given to articles which have appeared in MACHINERY, and to matter published in MACHINERY's Reference Series and Jig Sheets, giving additional information on the subject. These references will be of considerable value to readers who wish to make a more thorough study of the subject. In a note at the foot of the tables, reference is made to the page on which the explanatory note relating to each table appears.

TO WHOM
ADDRESS

SCREWS, BOLTS AND NUTS

Standard Screws and Nuts

In the tables on pages 4 to 8, inclusive, are given dimensions for fillister head screws, square head screws, headless set-screws, collar-head screws, hexagon head screws, hexagon nuts with regular and special fine threads, hexagon check-nuts, T-nuts, T-bolt heads, washers, thumb nuts and thumb screws. [MACHINERY, August, 1908, Dimensions of Screw Heads and Nuts.]

Standard Screws and Nuts for Automobile Work

The Association of Licensed Automobile Manufacturers has adopted special standards for castle nuts, plain nuts, bolts, screws, and screw threads, details of which are given in the tables on pages 9 to 12, inclusive. The number of threads per inch is greater, but the shape of the thread is the same as that of the U. S. standard system. [MACHINERY, November, 1906, Automobile Fine Screw Threads.]

Machine Screw Heads

In the tables on pages 14 and 15 are given standard proportions of machine screw heads as approved by the American Society of Mechanical Engineers. Both formulas and tabulated dimensions are given. [MACHINERY, June, 1906, Proposed Standards for Machine Screws.]

Dimensions of Studs and Bolts

Dimensions of stud bolts, machine bolts, studs and tap bolts are given in the table on page 16. Of course these dimensions must often be made to suit requirements, but for general use the dimensions as given will be found to suit most conditions in machine construction. Dimensions marked *X* are those which must be made to suit the design in hand, and are not specified.

Weights of Bolts and Nuts, and Steel Bars

In the table on page 17 are given the weights of steel bolts with nuts, when the length under head of the bolt and its diameter are known. The weights are given in pounds in the body of the table. In the lower part of the table the weights of steel bars are given, so that in cases where very long bolts are employed the weight can be found as indicated by the rule at the bottom of the table by a combination of the results obtained in the two tables.

Tap Drills for Standard Threads

On page 19 is given a tap drill table for threads of the U. S. standard shape. In the extreme column to the left, the diameter of the tap is given and at the top of the table, the number of threads per inch; the figures in the body of the table give the sizes of the tap drills to be used. In the tables on pages 20 and 21 are given the sizes of tap drills for machine screw threads made according to the old system, and also for standard diameters with V-threads. The drill specified does not give a full thread, but provides for a slight clearance. [MACHINERY's Reference Series No. 18, Shop Arithmetic for the Machinist, third edition, Chapter IV; MACHINERY's Jig Sheet No. 1B, Screw Threads and Tap Drills.]

Lock Nuts

A great variety of different means have been devised for locking nuts in place, to prevent accidental loosening. On pages 22 to 26, inclusive, are given types and dimensions of lock nuts. Pages 22 to 25 show twenty-seven different types of locking arrangements, care having been taken to select those that are most

(Continued on page 13.)

Table I.—Fillister Head Screws.

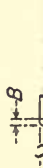
	A	$\frac{1}{16}$	$\frac{3}{32}$	$\frac{1}{8}$	$\frac{5}{32}$	$\frac{3}{16}$	$\frac{1}{2}$	$\frac{7}{16}$	$\frac{3}{8}$	$\frac{1}{2}$	$\frac{9}{16}$	$\frac{5}{8}$	$\frac{11}{16}$	$\frac{3}{4}$	$\frac{13}{16}$	$\frac{7}{8}$	$\frac{15}{16}$	1	$\frac{1}{8}$	$\frac{15}{16}$	$\frac{1}{4}$	$\frac{15}{32}$	$\frac{1}{2}$	$\frac{15}{16}$
	B	0.02	0.02	$\frac{1}{32}$	$\frac{1}{32}$	$\frac{3}{64}$	$\frac{1}{16}$	$\frac{5}{64}$	$\frac{7}{64}$	$\frac{1}{8}$	$\frac{9}{64}$	$\frac{5}{32}$	$\frac{11}{64}$	$\frac{3}{16}$	$\frac{13}{64}$	$\frac{7}{32}$	$\frac{15}{64}$	$\frac{1}{4}$	$\frac{1}{4}$	$\frac{15}{64}$	$\frac{1}{4}$	$\frac{9}{32}$	$\frac{1}{2}$	$\frac{15}{16}$
	C	.02	.02	.025	.025	.039	.039	.058	.071	.086	.099	.112	.133	.133	.133	.133	.165	.165	.165	.165	.165	.165	.165	.165
	D	$\frac{1}{8}$	$\frac{5}{32}$	$\frac{11}{32}$	$\frac{7}{32}$	$\frac{1}{4}$	$\frac{5}{16}$	$\frac{11}{32}$	$\frac{7}{16}$	$\frac{1}{2}$	$\frac{9}{16}$	$\frac{3}{4}$	$\frac{7}{8}$	$\frac{15}{16}$	$\frac{1}{16}$	$\frac{1}{16}$	$\frac{1}{16}$	$\frac{1}{16}$	$\frac{1}{16}$	$\frac{1}{16}$	$\frac{1}{16}$	$\frac{1}{16}$	$\frac{1}{16}$	$\frac{1}{16}$
	E	$\frac{1}{64}$	$\frac{1}{64}$	$\frac{1}{32}$	$\frac{1}{32}$	$\frac{1}{32}$	$\frac{1}{32}$	$\frac{1}{32}$	$\frac{3}{64}$	$\frac{1}{8}$	$\frac{3}{16}$	$\frac{1}{4}$	$\frac{3}{8}$	$\frac{1}{2}$	$\frac{1}{2}$	$\frac{1}{2}$	$\frac{1}{2}$	$\frac{1}{2}$	$\frac{1}{2}$	$\frac{1}{2}$	$\frac{1}{2}$	$\frac{1}{2}$	$\frac{1}{2}$	$\frac{1}{2}$
	F	$\frac{1}{16}$	$\frac{1}{16}$	$\frac{3}{32}$	$\frac{3}{32}$	$\frac{1}{8}$	$\frac{5}{32}$	$\frac{3}{16}$	$\frac{3}{16}$	$\frac{1}{4}$	$\frac{5}{16}$	$\frac{3}{8}$	$\frac{7}{16}$	$\frac{1}{2}$	$\frac{1}{2}$	$\frac{1}{2}$	$\frac{1}{2}$	$\frac{1}{2}$	$\frac{1}{2}$	$\frac{1}{2}$	$\frac{1}{2}$	$\frac{1}{2}$	$\frac{1}{2}$	$\frac{1}{2}$
No. of threads per inch		64	50	40	36	32	28	20	18	16	14	13	12	11	10	9	8	7	7	7	7	7	7	7

Table II.—Square Head Screws.

	A	$\frac{3}{16}$	$\frac{1}{4}$	$\frac{5}{16}$	$\frac{5}{16}$	$\frac{3}{8}$	$\frac{7}{16}$	$\frac{1}{2}$	$\frac{7}{16}$	$\frac{1}{2}$	$\frac{1}{2}$	$\frac{1}{2}$	$\frac{9}{16}$	$\frac{5}{8}$	$\frac{3}{4}$	$\frac{7}{8}$	$\frac{15}{16}$	1	$\frac{1}{8}$	$\frac{15}{16}$	$\frac{1}{4}$	$\frac{15}{32}$	$\frac{1}{2}$	$\frac{15}{16}$
	B	$\frac{3}{16}$	$\frac{1}{4}$	$\frac{5}{16}$	$\frac{5}{16}$	$\frac{3}{8}$	$\frac{7}{16}$	$\frac{1}{2}$	$\frac{7}{16}$	$\frac{1}{2}$	$\frac{1}{2}$	$\frac{1}{2}$	$\frac{9}{16}$	$\frac{5}{8}$	$\frac{3}{4}$	$\frac{7}{8}$	$\frac{15}{16}$	$\frac{1}{4}$	$\frac{1}{4}$	$\frac{15}{64}$	$\frac{1}{4}$	$\frac{9}{32}$	$\frac{1}{2}$	$\frac{15}{16}$
	C	0.20	0.35	0.44	0.53	0.44	0.53	0.62	0.53	0.62	0.71	0.62	0.71	0.79	0.88	0.79	0.88	1.06	0.88	1.06	0.88	1.06	1.24	1.24
	D	$\frac{1}{4}$	$\frac{5}{16}$	$\frac{3}{8}$	$\frac{7}{16}$	$\frac{1}{2}$	$\frac{3}{4}$	$\frac{1}{2}$	$\frac{7}{16}$	$\frac{1}{2}$	$\frac{9}{16}$	$\frac{1}{2}$	$\frac{9}{16}$	$\frac{5}{8}$	$\frac{11}{16}$	$\frac{13}{16}$	$\frac{15}{16}$	$\frac{1}{2}$	$\frac{1}{2}$	$\frac{13}{16}$	$\frac{1}{2}$	$\frac{11}{16}$	$\frac{13}{16}$	$\frac{15}{16}$
	No. of threads per inch	32	20	18	16	16	14	13	12	11	10	9	8	7	6	5	4	3	2	1	1	1	1	1

Table III.—Headless Set-Screws.

 According to requirements	A	$\frac{1}{8}$	$\frac{3}{16}$	$\frac{1}{4}$	$\frac{5}{16}$	$\frac{3}{8}$	$\frac{7}{16}$	$\frac{1}{2}$	$\frac{3}{4}$	$\frac{9}{16}$	$\frac{5}{8}$	$\frac{11}{16}$	$\frac{3}{4}$
	B	0.02	$\frac{1}{32}$	$\frac{3}{64}$	$\frac{1}{16}$	$\frac{5}{64}$	$\frac{7}{64}$	$\frac{1}{8}$	$\frac{9}{64}$	$\frac{5}{32}$	$\frac{11}{64}$	$\frac{3}{16}$	$\frac{7}{8}$
	C	0.02	0.025	0.039	0.039	0.058	0.071	0.086	0.099	0.112	0.133	0.133	0.133
	D	$\frac{1}{64}$	$\frac{1}{32}$	$\frac{1}{32}$	$\frac{1}{32}$	$\frac{1}{32}$	$\frac{1}{32}$	$\frac{1}{32}$	$\frac{3}{64}$	$\frac{1}{8}$	$\frac{3}{16}$	$\frac{1}{4}$	$\frac{3}{8}$
	No. of threads per inch	40	32	20	18	16	14	13	12	11	10	9	8

DIMENSIONS OF COLLAR-HEAD, AND STANDARD HEXAGON HEAD SCREWS

Table IV.—Collar-head Screws.

A	$\frac{3}{16}$	$\frac{1}{4}$	$\frac{5}{16}$	$\frac{3}{8}$	$\frac{7}{16}$	$\frac{1}{2}$	$\frac{9}{16}$	$\frac{5}{8}$	$\frac{3}{4}$
B	$\frac{3}{8}$	$\frac{1}{2}$	$\frac{9}{16}$	$\frac{5}{8}$	$\frac{11}{16}$	$\frac{3}{4}$	$\frac{15}{16}$	$\frac{1}{16}$	$\frac{1}{16}$
C	$\frac{3}{16}$	$\frac{1}{4}$	$\frac{5}{16}$	$\frac{3}{8}$	$\frac{7}{16}$	$\frac{1}{2}$	$\frac{9}{16}$	$\frac{5}{8}$	$\frac{3}{4}$
D	0.26	0.35	0.44	0.53	0.62	0.71	0.79	0.88	1.06
E	$\frac{1}{4}$	$\frac{5}{16}$	$\frac{3}{8}$	$\frac{7}{16}$	$\frac{1}{2}$	$\frac{9}{16}$	$\frac{5}{8}$	$\frac{11}{16}$	$\frac{13}{16}$
F	$\frac{3}{32}$	$\frac{1}{8}$	$\frac{1}{8}$	$\frac{5}{32}$	$\frac{3}{16}$	$\frac{5}{16}$	$\frac{3}{10}$	$\frac{7}{32}$	$\frac{1}{4}$
G	$\frac{1}{32}$	$\frac{3}{64}$	$\frac{3}{64}$	$\frac{5}{64}$	$\frac{1}{16}$	$\frac{3}{32}$	$\frac{3}{32}$	$\frac{3}{32}$	$\frac{3}{32}$
No of threads per inch	32	20	18	16	14	13	12	11	10

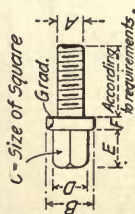


Table V.—Hexagon Head Screws.

A	$\frac{7}{8}$	1	$\frac{1}{8}$	$\frac{1}{4}$	$\frac{3}{8}$	$\frac{1}{2}$	$\frac{5}{8}$	$\frac{3}{4}$
B	$\frac{7}{16}$	$\frac{9}{16}$	$\frac{13}{16}$	$\frac{15}{16}$	$\frac{29}{64}$	$\frac{29}{64}$	$\frac{29}{64}$	$\frac{29}{64}$
C	$\frac{1}{4}$	$\frac{3}{8}$	$\frac{9}{16}$	$\frac{15}{16}$	$\frac{29}{64}$	$\frac{29}{64}$	$\frac{29}{64}$	$\frac{29}{64}$
D	$\frac{9}{16}$	$\frac{5}{8}$	$\frac{11}{16}$	$\frac{3}{4}$	$\frac{13}{16}$	$\frac{7}{8}$	$\frac{15}{16}$	$\frac{1}{16}$
No of threads per inch	9	8	7	7	6	6	$5\frac{1}{2}$	5



Table VII. - Standard Hexagon Nuts.

A = Size of tap E = Size of plain hole																
	No. of threads per inch	18	16	14	13	12	11	10	9	8	7	6	5	4	3	2
A	$\frac{1}{4}$	$\frac{5}{16}$	$\frac{3}{8}$	$\frac{7}{16}$	$\frac{1}{2}$	$\frac{9}{16}$	$\frac{5}{8}$	$\frac{11}{16}$	$\frac{3}{4}$	$\frac{7}{8}$	$\frac{1}{8}$	$\frac{1}{4}$	$\frac{3}{8}$	$\frac{1}{2}$	$\frac{5}{8}$	$\frac{3}{4}$
B	$\frac{1}{2}$	$\frac{37}{64}$	$\frac{23}{32}$	$\frac{7}{8}$	$\frac{1}{64}$	$\frac{1}{64}$	$\frac{15}{64}$	$\frac{1}{16}$	$\frac{7}{16}$	$\frac{13}{16}$	$\frac{1}{16}$	$\frac{264}{64}$	$\frac{264}{64}$	$\frac{264}{64}$	$\frac{264}{64}$	$\frac{264}{64}$
C	$\frac{7}{16}$	$\frac{1}{2}$	$\frac{5}{8}$	$\frac{3}{4}$	$\frac{7}{8}$	$\frac{7}{8}$	$\frac{1}{16}$	$\frac{1}{16}$	$\frac{1}{4}$	$\frac{1}{8}$	$\frac{1}{8}$	$\frac{15}{16}$	$\frac{2}{8}$	$\frac{2}{8}$	$\frac{2}{8}$	$\frac{2}{8}$
D	$\frac{3}{16}$	$\frac{1}{4}$	$\frac{1}{4}$	$\frac{5}{16}$	$\frac{3}{8}$	$\frac{7}{16}$	$\frac{1}{2}$	$\frac{1}{2}$	$\frac{1}{2}$	$\frac{1}{2}$	$\frac{1}{2}$	$\frac{1}{2}$	$\frac{1}{2}$	$\frac{1}{2}$	$\frac{1}{2}$	$\frac{1}{2}$
E	$\frac{3}{16}$	$\frac{1}{4}$	$\frac{19}{64}$	$\frac{23}{64}$	$\frac{13}{32}$	$\frac{15}{32}$	$\frac{33}{64}$	$\frac{37}{64}$	$\frac{5}{8}$	$\frac{47}{64}$	$\frac{27}{32}$	$\frac{61}{64}$	$\frac{119}{64}$	$\frac{127}{64}$	$\frac{135}{64}$	$\frac{143}{64}$
No. of threads per inch	20	18	16	14	13	12	11	10	9	8	7	6	5	4	3	2

Table VIII. - Hexagon Nuts with Special Fine Threads.

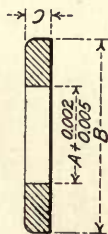
A = Size of tap B = Size of plain hole																
	No. of threads per inch	16	10	10	10	10	10	10	10	10	10	10	10	10	10	10
A	$\frac{5}{8}$	$\frac{11}{16}$	$\frac{1}{2}$	$\frac{3}{8}$	$\frac{1}{4}$	$\frac{3}{8}$	$\frac{1}{2}$	$\frac{3}{4}$	$\frac{1}{2}$	$\frac{3}{4}$	$\frac{1}{2}$	$\frac{3}{4}$	$\frac{1}{2}$	$\frac{3}{4}$	$\frac{1}{2}$	$\frac{3}{4}$
B	$\frac{35}{64}$	$\frac{39}{64}$	$\frac{43}{64}$	$\frac{47}{64}$	$\frac{51}{64}$	$\frac{55}{64}$	$\frac{59}{64}$	$\frac{63}{64}$	$\frac{67}{64}$	$\frac{71}{64}$	$\frac{75}{64}$	$\frac{79}{64}$	$\frac{83}{64}$	$\frac{87}{64}$	$\frac{91}{64}$	$\frac{95}{64}$
C	$\frac{1}{16}$	$\frac{1}{16}$	$\frac{1}{16}$	$\frac{1}{16}$	$\frac{1}{16}$	$\frac{1}{16}$	$\frac{1}{16}$	$\frac{1}{16}$	$\frac{1}{16}$	$\frac{1}{16}$	$\frac{1}{16}$	$\frac{1}{16}$	$\frac{1}{16}$	$\frac{1}{16}$	$\frac{1}{16}$	$\frac{1}{16}$
D	$\frac{5}{16}$	$\frac{5}{16}$	$\frac{5}{16}$	$\frac{5}{16}$	$\frac{5}{16}$	$\frac{5}{16}$	$\frac{5}{16}$	$\frac{5}{16}$	$\frac{5}{16}$	$\frac{5}{16}$	$\frac{5}{16}$	$\frac{5}{16}$	$\frac{5}{16}$	$\frac{5}{16}$	$\frac{5}{16}$	$\frac{5}{16}$
E	$\frac{15}{64}$	$\frac{15}{64}$	$\frac{15}{64}$	$\frac{15}{64}$	$\frac{15}{64}$	$\frac{15}{64}$	$\frac{15}{64}$	$\frac{15}{64}$	$\frac{15}{64}$	$\frac{15}{64}$	$\frac{15}{64}$	$\frac{15}{64}$	$\frac{15}{64}$	$\frac{15}{64}$	$\frac{15}{64}$	$\frac{15}{64}$
No. of threads per inch	16	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10

Table VIII. - Hexagon Check Nuts.

A = Size of tap B = Size of plain hole																
	No. of threads per inch	32	20	20	18	18	16	16	14	14	13	12	11	10	9	8
A	$\frac{3}{16}$	$\frac{1}{4}$	$\frac{1}{4}$	$\frac{1}{4}$	$\frac{1}{4}$	$\frac{1}{4}$	$\frac{5}{16}$	$\frac{3}{8}$	$\frac{3}{8}$	$\frac{7}{16}$	$\frac{1}{2}$	$\frac{9}{16}$	$\frac{5}{8}$	$\frac{11}{16}$	$\frac{3}{4}$	$\frac{7}{8}$
B	$\frac{9}{64}$	$\frac{3}{16}$	$\frac{3}{16}$	$\frac{3}{16}$	$\frac{3}{16}$	$\frac{3}{16}$	$\frac{1}{4}$	$\frac{19}{64}$	$\frac{19}{64}$	$\frac{23}{64}$	$\frac{23}{32}$	$\frac{15}{32}$	$\frac{33}{64}$	$\frac{37}{64}$	$\frac{47}{64}$	$\frac{57}{64}$
C	$\frac{7}{16}$	$\frac{1}{2}$	$\frac{1}{2}$	$\frac{1}{2}$	$\frac{1}{2}$	$\frac{1}{2}$	$\frac{5}{8}$	$\frac{3}{4}$	$\frac{3}{4}$	$\frac{7}{8}$	$\frac{1}{2}$	$\frac{9}{16}$	$\frac{5}{8}$	$\frac{11}{16}$	$\frac{3}{4}$	$\frac{7}{8}$
D	$\frac{5}{32}$	$\frac{5}{32}$	$\frac{5}{32}$	$\frac{5}{32}$	$\frac{5}{32}$	$\frac{5}{32}$	$\frac{1}{4}$	$\frac{1}{4}$	$\frac{1}{4}$	$\frac{1}{4}$	$\frac{5}{16}$	$\frac{5}{16}$	$\frac{5}{16}$	$\frac{5}{16}$	$\frac{5}{16}$	$\frac{5}{16}$
E	$\frac{1}{2}$	$\frac{1}{2}$	$\frac{1}{2}$	$\frac{1}{2}$	$\frac{1}{2}$	$\frac{1}{2}$	$\frac{23}{32}$	$\frac{23}{32}$	$\frac{23}{32}$	$\frac{23}{32}$	$\frac{1}{164}$	$\frac{15}{164}$	$\frac{15}{164}$	$\frac{15}{164}$	$\frac{15}{164}$	$\frac{15}{164}$
No. of threads per inch	32	20	20	18	18	16	16	14	14	13	12	11	10	9	8	8

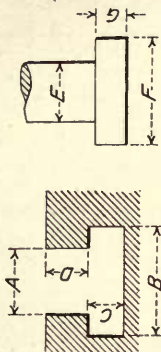
DIMENSIONS OF WASHERS, T-BOLT HEADS, AND T-NUTS

Table IX. - Washers.



A	B	C
$\frac{1}{4}$	$\frac{5}{8}$	$\frac{3}{32}$
$\frac{5}{16}$	$\frac{3}{4}$	$\frac{7}{64}$
$\frac{3}{8}$	$\frac{7}{8}$	$\frac{1}{8}$
$\frac{7}{16}$	1	$\frac{9}{64}$
$\frac{1}{2}$	$\frac{1}{8}$	$\frac{5}{32}$
$\frac{9}{16}$	$\frac{1}{4}$	$\frac{11}{64}$
$\frac{5}{8}$	$\frac{3}{8}$	$\frac{7}{16}$
$\frac{11}{16}$	$\frac{1}{2}$	$\frac{63}{64}$
$\frac{3}{4}$	$\frac{5}{8}$	$\frac{3}{2}$
$\frac{7}{8}$	$\frac{1}{8}$	$\frac{1}{4}$
1	2	$\frac{1}{4}$
$\frac{1}{8}$	$2\frac{1}{4}$	$\frac{9}{32}$
$\frac{1}{4}$	$2\frac{1}{2}$	$\frac{5}{16}$
$\frac{3}{8}$	$2\frac{3}{4}$	$\frac{11}{32}$
$\frac{1}{2}$	3	$\frac{3}{8}$
$\frac{5}{8}$	$3\frac{1}{4}$	$\frac{13}{32}$
$\frac{3}{4}$	$3\frac{1}{2}$	$\frac{7}{16}$
$\frac{7}{8}$	$3\frac{3}{4}$	$\frac{15}{32}$
2	4	$\frac{1}{2}$

Table X. - T-Bolt Heads.



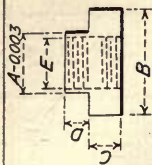
Slot.			Bolt-Head.			
A	B	C	D*	E	F	G
$\frac{1}{4}$	$\frac{1}{2}$	$\frac{5}{32}$	$\frac{3}{16}$	$\frac{3}{16}$	$\frac{7}{16}$	$\frac{1}{8}$
$\frac{5}{16}$	$\frac{5}{8}$	$\frac{5}{32}$	$\frac{3}{16}$	$\frac{1}{4}$	$\frac{9}{16}$	$\frac{1}{8}$
$\frac{3}{8}$	$\frac{11}{16}$	$\frac{7}{32}$	$\frac{1}{4}$	$\frac{5}{16}$	$\frac{5}{8}$	$\frac{3}{16}$
$\frac{7}{16}$	$\frac{13}{16}$	$\frac{7}{32}$	$\frac{9}{32}$	$\frac{3}{8}$	$\frac{3}{4}$	$\frac{3}{16}$
$\frac{1}{2}$	$\frac{15}{16}$	$\frac{9}{32}$	$\frac{5}{16}$	$\frac{7}{16}$	$\frac{7}{8}$	$\frac{1}{4}$
$\frac{5}{8}$	$\frac{17}{16}$	$\frac{13}{32}$	$\frac{3}{8}$	$\frac{9}{16}$	$\frac{1}{8}$	$\frac{11}{32}$
$\frac{3}{4}$	$\frac{5}{16}$	$\frac{17}{32}$	$\frac{1}{2}$	$\frac{11}{16}$	$\frac{1}{4}$	$\frac{15}{32}$
$\frac{7}{8}$	$\frac{1}{8}$	$\frac{11}{16}$	$\frac{9}{16}$	$\frac{3}{4}$	$\frac{1}{2}$	$\frac{9}{16}$
1	$\frac{1}{8}$	$\frac{13}{16}$	$\frac{5}{8}$	$\frac{7}{8}$	$\frac{3}{4}$	$\frac{11}{16}$

* Minimum distance permissible.

Maximum distance of D equals

 $A + \frac{1}{16}$ for sizes of bolt up to $\frac{5}{8}$,1 for $\frac{1}{2}$ size of bolt, $\frac{1}{16}$ for $\frac{3}{4}$ size of bolt, $\frac{3}{16}$ for $\frac{7}{8}$ size of bolt.

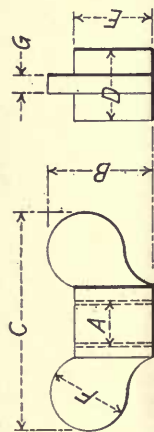
Table XI. - T-Nuts.



A	B	C	D	E
$\frac{3}{16}$	$\frac{7}{16}$	$\frac{1}{8}$	$\frac{3}{32}$	$\frac{1}{8}$
$\frac{1}{4}$	$\frac{9}{16}$	$\frac{1}{8}$	$\frac{1}{8}$	$\frac{1}{8}$
$\frac{5}{16}$	$\frac{5}{8}$	$\frac{3}{16}$	$\frac{1}{8}$	$\frac{3}{16}$
$\frac{3}{8}$	$\frac{3}{4}$	$\frac{3}{16}$	$\frac{5}{32}$	$\frac{1}{4}$
$\frac{7}{16}$	$\frac{7}{8}$	$\frac{1}{4}$	$\frac{3}{16}$	$\frac{5}{16}$
$\frac{9}{16}$	$\frac{1}{8}$	$\frac{11}{32}$	$\frac{3}{16}$	$\frac{3}{8}$
$\frac{11}{16}$	$\frac{1}{4}$	$\frac{15}{32}$	$\frac{1}{4}$	$\frac{7}{16}$
$\frac{3}{4}$	$\frac{1}{2}$	$\frac{9}{16}$	$\frac{5}{16}$	$\frac{1}{2}$
$\frac{7}{8}$	$\frac{3}{4}$	$\frac{11}{16}$	$\frac{5}{16}$	$\frac{3}{4}$
	$\frac{1}{2}$	$\frac{11}{16}$	$\frac{5}{16}$	$\frac{3}{4}$

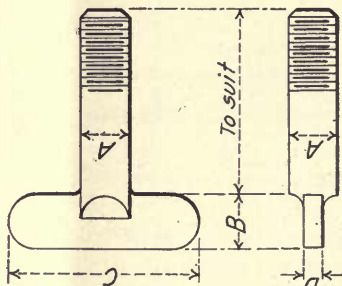
THUMB SCREWS AND THUMB NUTS

Dimensions of Wing or Thumb Nuts.



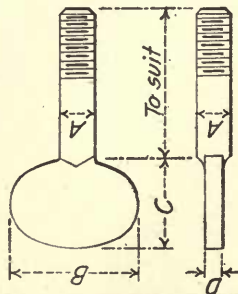
A	B	C	D	E	F	G
$\frac{3}{16}$	$\frac{5}{8}$	$\frac{1}{8}$	$\frac{5}{16}$	$\frac{3}{8}$	$\frac{7}{16}$	$\frac{1}{8}$
$\frac{1}{4}$	$\frac{3}{4}$	$\frac{3}{8}$	$\frac{15}{32}$	$\frac{1}{2}$	$\frac{17}{32}$	$\frac{5}{32}$
$\frac{5}{16}$	$\frac{3}{4}$	$\frac{3}{8}$	$\frac{15}{32}$	$\frac{1}{2}$	$\frac{17}{32}$	$\frac{5}{32}$
$\frac{3}{8}$	$\frac{13}{16}$	$\frac{11}{16}$	$\frac{17}{32}$	$\frac{9}{16}$	$\frac{5}{8}$	$\frac{5}{32}$
$\frac{7}{16}$	$\frac{7}{8}$	2	$\frac{21}{32}$	$\frac{5}{8}$	$\frac{11}{16}$	$\frac{3}{16}$
$\frac{1}{2}$	$\frac{15}{16}$	$2\frac{1}{4}$	$\frac{3}{4}$	$\frac{13}{16}$	$\frac{7}{8}$	$\frac{3}{16}$

Dimensions of Thumb Screws with Wide Grip.



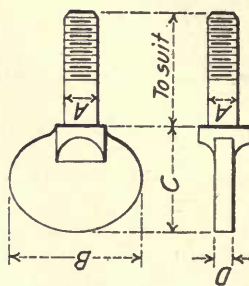
A	B	C	D
$\frac{3}{16}$	$\frac{1}{4}$	$\frac{7}{8}$	$\frac{3}{32}$
$\frac{1}{4}$	$\frac{5}{16}$	1	$\frac{1}{8}$
$\frac{5}{16}$	$\frac{3}{8}$	$1\frac{1}{4}$	$\frac{5}{32}$
$\frac{3}{8}$	$\frac{7}{16}$	$1\frac{1}{2}$	$\frac{5}{32}$
$\frac{7}{16}$	$\frac{1}{2}$	$1\frac{3}{4}$	$\frac{3}{16}$
$\frac{1}{2}$	$\frac{9}{16}$	2	$\frac{3}{16}$
$\frac{9}{16}$	$\frac{5}{8}$	$2\frac{1}{4}$	$\frac{3}{16}$
$\frac{5}{8}$	$\frac{11}{16}$	$2\frac{1}{2}$	$\frac{7}{32}$

Dimensions of Regular Thumb Screws.



A	B	C	D
$\frac{3}{16}$	$\frac{3}{4}$	$\frac{5}{8}$	$\frac{3}{32}$
$\frac{1}{4}$	$\frac{15}{16}$	$\frac{3}{4}$	$\frac{1}{8}$
$\frac{5}{16}$	$\frac{1}{8}$	$\frac{7}{8}$	$\frac{5}{32}$
$\frac{3}{8}$	$\frac{1}{4}$	$\frac{15}{16}$	$\frac{5}{32}$
$\frac{7}{16}$	$\frac{1}{2}$	$\frac{11}{16}$	$\frac{3}{16}$
$\frac{1}{2}$	$\frac{5}{8}$	$\frac{13}{16}$	$\frac{3}{16}$

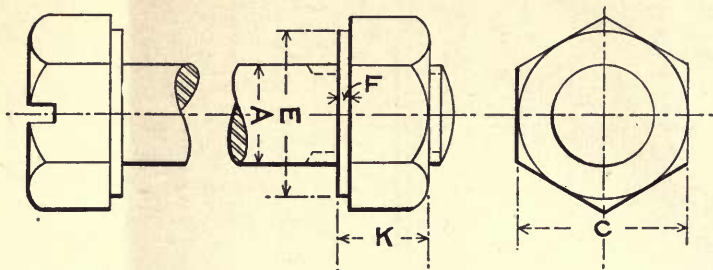
Dimensions of Shoulder Thumb Screws.



A	B	C	D
$\frac{3}{16}$	$\frac{9}{16}$	$\frac{1}{2}$	$\frac{3}{32}$
$\frac{1}{4}$	1	$1\frac{1}{16}$	$\frac{1}{8}$
$\frac{5}{16}$	$\frac{1}{8}$	$\frac{3}{4}$	$\frac{5}{32}$
$\frac{3}{8}$	$\frac{1}{4}$	$\frac{13}{16}$	$\frac{5}{32}$
$\frac{7}{16}$	$\frac{1}{2}$	$\frac{15}{16}$	$\frac{3}{16}$
$\frac{1}{2}$	$\frac{5}{8}$	$1\frac{1}{8}$	$\frac{3}{16}$

THE A. L. A. M. STANDARD SCREWS AND NUTS—II

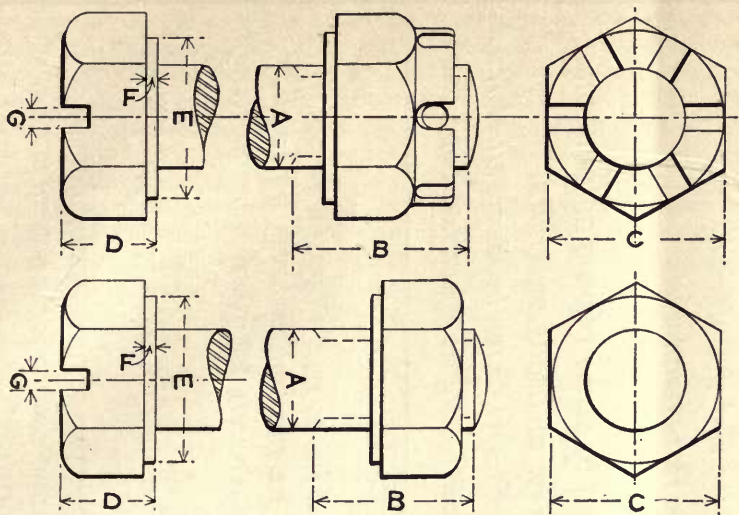
DIMENSIONS OF PLAIN NUTS



Screw Diameter	Diameter across Flats	Diameter of Facing	Depth of Facing	Thickness of Nut
A	C	E	F	K
$\frac{1}{4}$	$\frac{3}{8}$	$\frac{3}{8}$	$\frac{1}{64}$	$\frac{7}{32}$
$\frac{5}{16}$	$\frac{1}{2}$	$\frac{1}{2}$	$\frac{1}{64}$	$\frac{17}{64}$
$\frac{3}{8}$	$\frac{9}{16}$	$\frac{9}{16}$	$\frac{1}{64}$	$\frac{21}{64}$
$\frac{7}{16}$	$\frac{11}{16}$	$\frac{11}{16}$	$\frac{1}{64}$	$\frac{3}{8}$
$\frac{1}{2}$	$\frac{3}{4}$	$\frac{3}{4}$	$\frac{1}{64}$	$\frac{7}{16}$
$\frac{9}{16}$	$\frac{7}{8}$	$\frac{7}{8}$	$\frac{1}{64}$	$\frac{31}{64}$
$\frac{5}{8}$	$\frac{15}{16}$	$\frac{15}{16}$	$\frac{1}{64}$	$\frac{35}{64}$
$\frac{11}{16}$	1	1	$\frac{1}{64}$	$\frac{19}{32}$
$\frac{3}{4}$	$1\frac{1}{8}$	$1\frac{1}{8}$	$\frac{1}{64}$	$\frac{21}{32}$
$\frac{7}{8}$	$1\frac{1}{4}$	$1\frac{1}{4}$	$\frac{1}{64}$	$\frac{49}{64}$
1	$1\frac{7}{16}$	$1\frac{7}{16}$	$\frac{1}{64}$	$\frac{7}{8}$

THE A. L. A. M. STANDARD SCREWS AND NUTS—III

DIMENSIONS OF SCREWS Form of Thread, U.S. Standard.



Diameter	Pitch	Length of Threaded portion	Diameter of Head across Flats	Thickness of Head	Diameter of Facing under Head	Depth of Facing under Head	Width of Slot in Head	Depth of Slot in Head	Diameter of Cotter Pin Hole
A		B	C	D	E	F	G		
$\frac{1}{4}$	28	$\frac{3}{16}$	$\frac{3}{16}$	$\frac{3}{16}$	$\frac{3}{16}$	$\frac{1}{64}$	$\frac{1}{16}$	$\frac{3}{32}$	$\frac{5}{64}$
$\frac{5}{16}$	24	$\frac{15}{32}$	$\frac{1}{2}$	$\frac{15}{64}$	$\frac{1}{2}$	$\frac{1}{64}$	$\frac{1}{16}$	$\frac{7}{64}$	$\frac{5}{64}$
$\frac{3}{8}$	24	$\frac{9}{16}$	$\frac{9}{16}$	$\frac{9}{32}$	$\frac{9}{16}$	$\frac{1}{64}$	$\frac{3}{32}$	$\frac{1}{8}$	$\frac{1}{8}$
$\frac{7}{16}$	20	$\frac{21}{32}$	$\frac{11}{16}$	$\frac{21}{64}$	$\frac{11}{16}$	$\frac{1}{64}$	$\frac{3}{32}$	$\frac{1}{8}$	$\frac{1}{8}$
$\frac{1}{2}$	20	$\frac{3}{4}$	$\frac{3}{4}$	$\frac{3}{8}$	$\frac{3}{4}$	$\frac{1}{64}$	$\frac{3}{32}$	$\frac{1}{8}$	$\frac{1}{8}$
$\frac{9}{16}$	18	$\frac{27}{32}$	$\frac{7}{8}$	$\frac{27}{64}$	$\frac{7}{8}$	$\frac{1}{64}$	$\frac{3}{32}$	$\frac{1}{8}$	$\frac{5}{32}$
$\frac{5}{8}$	18	$\frac{15}{16}$	$\frac{15}{16}$	$\frac{15}{32}$	$\frac{15}{16}$	$\frac{1}{64}$	$\frac{3}{32}$	$\frac{1}{8}$	$\frac{5}{32}$
$\frac{11}{16}$	16	$\frac{1}{32}$	1	$\frac{33}{64}$	1	$\frac{1}{64}$	$\frac{3}{32}$	$\frac{1}{8}$	$\frac{5}{32}$
$\frac{3}{4}$	16	$\frac{1}{8}$	$\frac{1}{8}$	$\frac{9}{16}$	$\frac{1}{8}$	$\frac{1}{64}$	$\frac{3}{32}$	$\frac{1}{8}$	$\frac{5}{32}$
$\frac{7}{8}$	14	$\frac{5}{16}$	$\frac{1}{4}$	$\frac{21}{32}$	$\frac{1}{4}$	$\frac{1}{64}$	$\frac{3}{32}$	$\frac{1}{8}$	$\frac{5}{32}$
1	14	$\frac{1}{2}$	$\frac{7}{16}$	$\frac{3}{4}$	$\frac{7}{16}$	$\frac{1}{64}$	$\frac{3}{32}$	$\frac{1}{8}$	$\frac{5}{32}$

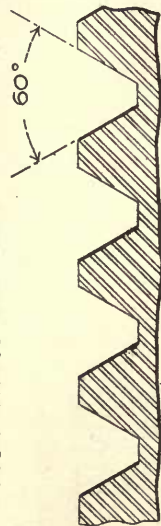
NOTES ON MATERIAL, FINISH, AND DIMENSIONS

1-Material

For all screws and nuts—steel,
Tensile strength, not less than 100,000
lbs. per square inch;
Elastic limit, not less than 60,000
lbs. per square inch.

2-Dimensions

All dimensions in inches.
Length of threaded portion: $1\frac{1}{2}$
times body diameter.

3-Form of Thread
United States Standard

Flat top and bottom, one eighth of the pitch.

4-Finish

Screw heads shall be flat chamfered.
Plain nuts shall be flat chamfered.
Castle nuts shall be chamfered.
What is understood by screw makers as "semi-finish"
shall be the finish for all heads and nuts.
Screws are to be left soft. Screw heads are to be left soft.
The plain nuts are to be left soft. The castle nuts are to be case-hardened

5-Tolerance

The body diameter of the screw shall be one-thousandth
(.001") inch less than the nominal diameter, with a plus
tolerance of zero and a minus tolerance of two-thousandths
(.002") inch.

The nuts shall be a good fit, without perceptible shake

The clearance between tops of threads and bottom of
threads in nuts shall be that existing in the present practice of
machine screw makers; that is, the tap shall be between two-
thousandths (.002") inch and three-thousandths (.003") inch large.

commonly found in engineering practice. Reference to all the types is unnecessary, as the design of most of them is obvious. It may be mentioned, however, that Fig. 2 represents the United States Navy standard form of lock nut. It will be noticed that the first shoulder below the nut proper fits into the hole below, while the second shoulder is smaller and presents a "face" for the set-screw to engage with. The nut proper should never come down flush against the stock; $1/32$ inch clearance is allowed here for all sizes of nuts. Fig. 3 shows a type where a groove is turned into the lower side of the nut, with which the set-screw point engages. Fig. 7 requires a specially made nut. It is made of stock one-half the thickness of the nut, which is doubled over on itself as shown, and afterwards tapped. After this nut is screwed down tight in place a little extra twist on the top half locks it very securely. Fig. 8 shows an inner nut tapered on the outside and split. This inner nut fits in an outer shell having a tapered hole. Fig. 12 shows the ear washer type; after the nut is screwed down in place, the ear on the washer is bent up against the flat side of the nut. The washer is provided with a small pin to keep it from turning. The nut in Fig. 14 works on the same principle as that in Fig. 7, but no specially made nut is required, a regular hexagon nut with a slot sawed a little past the center and about three threads from the top being used. In Fig. 22 an ordinary bolt and nut are used; the bolt is allowed to come through the nut a short distance, the end of the bolt being sawed as indicated before the nut is screwed on. After the nut is screwed home the end of the bolt is wedged out a trifle with a dull chisel. In Fig. 26 a locking arrangement is shown consisting of a small hole drilled through the bolt flush with the top of the nut. A piece of soft wire is run through the hole and wound around the bolt. In Fig. 27 a slotted nut is required. A groove is cut down

the side of the bolt deep enough to contain a wire. The nut is then screwed down with the wire in place in the slot in the bolt, and the wire bent over into one of the slots in the nut. The construction of the locking arrangements not specifically mentioned is clearly indicated by the engravings. Page 26 gives dimensions for the specific type of lock nuts previously mentioned as being adopted as a standard by the United States Navy. [MACHINERY, September, 1908, Lock Nuts Used in Engineering Practice.]

Standard Round Slotted Nuts and Round-head Bolts

On page 27 are given dimensions for standard round slotted nuts provided with slots or grooves in the periphery intended for spanner wrenches. Of course, these dimensions must sometimes be varied according to requirements.

On page 28 are given dimensions of special round-head bolts to be locked in position by a special locking pin, and provided with a hole in the side of the head for turning the bolt with a pin.

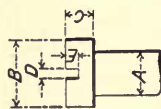
Stock Required for Upsetting Screw Ends

On page 30 is tabulated the amount of extra stock which is required for upsetting bolt and screw ends. The first column in the table gives the original diameter of the rod, the second column gives the diameter of the upset part, and the remaining columns give the extra length required when the length of upset is 1, 2, 3, 4, 5 or 6 inches.

Eyebolts and Pins

On page 32 proportions of eyebolts are given, as well as the dimensions of the connecting pins passing through the bolts. The last column in the table gives the safe load in pounds which can be sustained by the eyebolts. The pins are so proportioned that they can safely carry the same load as the eyebolt. For this reason the pin diameters must vary according to whether the pin is in single or double shear.

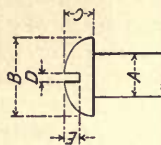
Flat Filler Head Screws.



A = Diameter of Body
 $B = 1.64A - 0.009$ = Diam. of Head
 $C = 0.06A - 0.002$ = Height of Head
 $D = 0.173A + 0.015$ = Width of Head
 $E = \frac{1}{2}C$ = Depth of Slot

A	B	C	D	E
0.060	0.0894	0.0376	0.025	0.019
0.073	0.1107	0.0461	0.028	0.023
0.086	0.1320	0.0548	0.030	0.027
0.099	0.1530	0.0633	0.032	0.032
0.112	0.1747	0.0719	0.034	0.036
0.125	0.1960	0.0805	0.037	0.040
0.138	0.2170	0.0890	0.039	0.044
0.151	0.2386	0.0976	0.041	0.049
0.164	0.2599	0.1062	0.043	0.053
0.177	0.2813	0.1148	0.046	0.057
0.190	0.3026	0.1234	0.048	0.062
0.216	0.3452	0.1405	0.052	0.070
0.242	0.3879	0.1577	0.057	0.079
0.268	0.4305	0.1748	0.061	0.087
0.294	0.4731	0.1920	0.066	0.096
0.320	0.5158	0.2092	0.070	0.104
0.346	0.5584	0.2263	0.075	0.113
0.372	0.6010	0.2435	0.079	0.122
0.398	0.6437	0.2606	0.084	0.130
0.424	0.6863	0.2778	0.088	0.139
0.450	0.7270	0.2950	0.093	0.147

Round Head Screws.



A = Diameter of Body
 $B = 1.85A - 0.005$ = Diam. of Head
 $C = 0.7A$ = Height of Head
 $D = 1.73A + 0.015$ = Width of Head
 $E = \frac{1}{2}C + 0.01$ = Depth of Slot

A	B	C	D	E
0.060	0.106	0.042	0.025	0.031
0.073	0.130	0.051	0.028	0.035
0.086	0.154	0.060	0.030	0.040
0.099	0.178	0.069	0.032	0.044
0.112	0.202	0.078	0.034	0.049
0.125	0.226	0.087	0.037	0.053
0.138	0.250	0.096	0.039	0.058
0.151	0.274	0.105	0.041	0.062
0.164	0.298	0.114	0.043	0.067
0.177	0.322	0.123	0.046	0.071
0.190	0.346	0.133	0.048	0.076
0.216	0.394	0.151	0.052	0.085
0.242	0.443	0.169	0.057	0.094
0.268	0.491	0.187	0.061	0.103
0.294	0.539	0.205	0.066	0.112
0.320	0.587	0.224	0.070	0.122
0.346	0.635	0.242	0.075	0.131
0.372	0.683	0.260	0.079	0.140
0.398	0.731	0.278	0.084	0.149
0.424	0.779	0.296	0.088	0.158
0.450	0.827	0.315	0.093	0.167

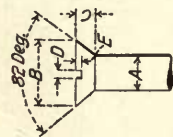
STANDARD PROPORTIONS FOR MACHINE SCREW HEADS—II

No. 2

SCREWS, BOLTS AND NUTS

15

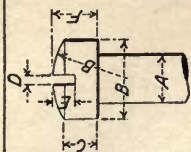
Flat Head Screws.



A = Diameter of Body
 $2A - 0.008$ = Diameter of Head
 $C = A - 1.739$ = Thickness of Head
 $D = 0.173A + 0.015$ = Width of Slot
 $E = \frac{1}{3}C$ = Depth of Slot

A	B	C	D	E
0.080	0.112	0.029	0.025	0.010
0.073	0.138	0.037	0.028	0.012
0.066	0.164	0.045	0.030	0.015
0.059	0.190	0.052	0.032	0.017
0.112	0.216	0.060	0.034	0.020
0.125	0.242	0.067	0.037	0.022
0.138	0.262	0.075	0.039	0.025
0.151	0.294	0.082	0.041	0.027
0.164	0.320	0.090	0.043	0.030
0.177	0.346	0.097	0.046	0.032
0.190	0.372	0.105	0.048	0.035
0.216	0.424	0.120	0.052	0.040
0.242	0.472	0.135	0.057	0.045
0.268	0.528	0.150	0.061	0.050
0.294	0.580	0.164	0.066	0.055
0.320	0.632	0.179	0.070	0.060
0.346	0.682	0.194	0.075	0.065
0.372	0.732	0.209	0.079	0.070
0.398	0.788	0.224	0.084	0.075
0.424	0.840	0.239	0.088	0.080
0.450	0.892	0.254	0.093	0.085

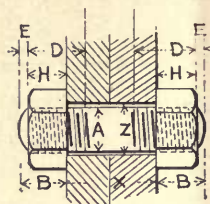
Oval Fillister Head Screws.



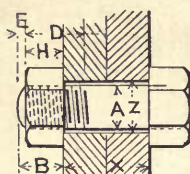
A = Diameter of Body
 $B = 1.644 - 0.009$ = Diam. of Head and Radius for Oval
 $C = 0.66A - 0.002$ = Height of Side
 $D = 1.13A + 0.015$ = Width of Slot
 $E = \frac{1}{2}F$ = Depth of Slot
 $F = 0.134B + C$ = Height of Head

A	B	C	D	E	F
0.080	0.894	0.0376	0.025	0.025	0.0496
0.073	0.1107	0.0461	0.028	0.030	0.0609
0.066	0.1320	0.0548	0.030	0.036	0.0725
0.059	0.1530	0.0633	0.032	0.042	0.0838
0.112	0.1747	0.0719	0.034	0.048	0.0953
0.125	0.1960	0.0805	0.037	0.053	0.1068
0.138	0.2170	0.0890	0.039	0.059	0.1180
0.151	0.2386	0.0976	0.041	0.065	0.1296
0.164	0.2599	0.1062	0.043	0.071	0.1410
0.177	0.2813	0.1148	0.046	0.076	0.1524
0.190	0.3026	0.1234	0.048	0.082	0.1639
0.216	0.3452	0.1405	0.052	0.093	0.1868
0.242	0.3879	0.1577	0.057	0.105	0.2097
0.268	0.4305	0.1748	0.061	0.116	0.2325
0.294	0.4731	0.1920	0.066	0.128	0.2554
0.320	0.5158	0.2092	0.070	0.140	0.2783
0.346	0.5584	0.2263	0.075	0.150	0.3011
0.372	0.6010	0.2435	0.079	0.162	0.3240
0.398	0.6437	0.2606	0.084	0.173	0.3469
0.424	0.6863	0.2778	0.088	0.185	0.3698
0.450	0.7270	0.2950	0.093	0.201	0.4024

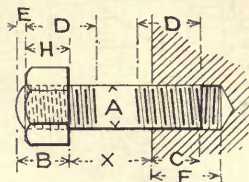
DIMENSIONS OF STUDS AND BOLTS



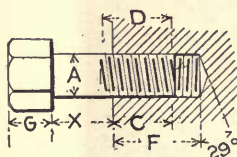
Stud Bolt.



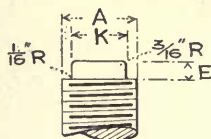
Machine Bolt.



Stud.



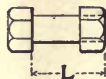
Tap Bolt.



A=Diam. of Bolt	B	C	D	E	F	G	H	K	B+C	B+B	Z	A=Diam. of Bolt.
$\frac{1}{2}$ "	$\frac{5}{8}$ "	$\frac{3}{4}$ "	$\frac{7}{8}$ "	$\frac{1}{8}$ "	1"	$\frac{7}{16}$ "	$\frac{1}{2}$ "		$1\frac{3}{8}$ "	$\frac{1}{4}$ "	$\frac{5}{8}$ "	$\frac{1}{2}$ "
$\frac{5}{8}$ "	$\frac{3}{4}$ "	$\frac{7}{8}$ "	1"	$\frac{1}{8}$ "	$\frac{1}{8}$ "	$\frac{9}{16}$ "	$\frac{5}{8}$ "		$1\frac{5}{8}$ "	$\frac{1}{2}$ "	$\frac{3}{4}$ "	$\frac{5}{8}$ "
$\frac{3}{4}$ "	$\frac{7}{8}$ "	1"	$\frac{1}{8}$ "	$\frac{1}{8}$ "	$\frac{13}{16}$ "	$\frac{11}{16}$ "	$\frac{3}{4}$ "		$1\frac{7}{8}$ "	$\frac{13}{16}$ "	$\frac{7}{8}$ "	$\frac{3}{4}$ "
$\frac{7}{8}$ "	1"	$\frac{1}{8}$ "	$\frac{13}{16}$ "	$\frac{1}{8}$ "	$\frac{15}{16}$ "	$\frac{13}{16}$ "	$\frac{7}{8}$ "		$2\frac{1}{8}$ "	2"	1"	$\frac{7}{8}$ "
1"	$\frac{1}{8}$ "	$\frac{1}{4}$ "	$\frac{1}{2}$ "	$\frac{1}{8}$ "	$\frac{13}{16}$ "	$\frac{15}{16}$ "	1"		$2\frac{3}{8}$ "	$2\frac{1}{4}$ "	$\frac{1}{8}$ "	1"
$\frac{1}{8}$ "	$\frac{1}{4}$ "	$\frac{13}{16}$ "	$\frac{15}{16}$ "	$\frac{1}{8}$ "	2"	$\frac{1}{16}$ "	$\frac{1}{8}$ "		$2\frac{5}{8}$ "	$2\frac{1}{2}$ "	$\frac{1}{4}$ "	$\frac{1}{8}$ "
$\frac{1}{4}$ "	$\frac{13}{16}$ "	$\frac{15}{16}$ "	$\frac{17}{8}$ "	$\frac{1}{8}$ "	$2\frac{1}{4}$ "	$\frac{13}{16}$ "	$\frac{1}{4}$ "		3"	$2\frac{3}{4}$ "	$\frac{13}{16}$ "	$\frac{1}{4}$ "
$\frac{13}{16}$ "	$\frac{15}{16}$ "	$\frac{13}{4}$ "	2"	$\frac{1}{4}$ "	$2\frac{1}{2}$ "	$\frac{15}{16}$ "	$\frac{13}{8}$ "		$3\frac{3}{8}$ "	$\frac{3}{4}$ "	$\frac{1}{2}$ "	$\frac{13}{8}$ "
$\frac{1}{2}$ "	$\frac{13}{4}$ "	$\frac{17}{8}$ "	$2\frac{1}{4}$ "	$\frac{1}{4}$ "	$2\frac{5}{8}$ "	$\frac{17}{16}$ "	$\frac{1}{2}$ "		$3\frac{5}{8}$ "	$3\frac{1}{2}$ "	$\frac{15}{8}$ "	$\frac{1}{2}$ "
$\frac{5}{8}$ "	$\frac{17}{8}$ "	2"	$2\frac{3}{8}$ "	$\frac{1}{4}$ "	$2\frac{3}{4}$ "	$\frac{19}{16}$ "	$\frac{15}{8}$ "		$3\frac{7}{8}$ "	$3\frac{3}{4}$ "	$\frac{13}{4}$ "	$\frac{15}{8}$ "
$\frac{3}{4}$ "	2"	$2\frac{1}{4}$ "	$2\frac{5}{8}$ "	$\frac{1}{4}$ "	3"	$\frac{11}{16}$ "	$\frac{13}{4}$ "		$4\frac{1}{4}$ "	4"	2"	$\frac{13}{4}$ "
$\frac{7}{8}$ "	$2\frac{1}{8}$ "	$2\frac{3}{8}$ "	$2\frac{7}{8}$ "	$\frac{1}{4}$ "	$3\frac{1}{4}$ "	$\frac{13}{16}$ "	$\frac{17}{8}$ "		$4\frac{1}{2}$ "	$4\frac{1}{4}$ "	$2\frac{1}{8}$ "	$\frac{17}{8}$ "
2"	$2\frac{1}{4}$ "	$2\frac{1}{2}$ "	3"	$\frac{1}{4}$ "	$3\frac{1}{2}$ "	$\frac{15}{16}$ "	2"	$\frac{1}{16}$ "	$4\frac{3}{4}$ "	$4\frac{1}{2}$ "	$2\frac{1}{4}$ "	2"
$2\frac{1}{8}$ "	$2\frac{3}{8}$ "	$2\frac{5}{8}$ "	$3\frac{1}{4}$ "	$\frac{1}{4}$ "	$3\frac{3}{4}$ "	$2\frac{1}{16}$ "	$2\frac{1}{8}$ "	$\frac{13}{16}$ "	5"	$4\frac{3}{4}$ "	$2\frac{3}{8}$ "	$2\frac{1}{8}$ "
$2\frac{1}{4}$ "	$2\frac{1}{2}$ "	$2\frac{7}{8}$ "	$3\frac{3}{8}$ "	$\frac{1}{4}$ "	4"	$2\frac{3}{16}$ "	$2\frac{1}{4}$ "	$\frac{15}{16}$ "	$5\frac{3}{8}$ "	5"	$2\frac{1}{2}$ "	$2\frac{1}{4}$ "
$2\frac{3}{8}$ "	$2\frac{5}{8}$ "	3"	$3\frac{5}{8}$ "	$\frac{1}{4}$ "	$4\frac{1}{4}$ "	$2\frac{5}{16}$ "	$2\frac{3}{8}$ "	2"	$5\frac{5}{8}$ "	$5\frac{1}{4}$ "	$2\frac{5}{8}$ "	$2\frac{3}{8}$ "
$2\frac{1}{2}$ "	$2\frac{3}{4}$ "	$3\frac{1}{8}$ "	$3\frac{3}{4}$ "	$\frac{1}{4}$ "	$4\frac{3}{8}$ "	$2\frac{7}{16}$ "	$2\frac{1}{2}$ "	$2\frac{1}{8}$ "	$5\frac{7}{8}$ "	$5\frac{1}{2}$ "	$2\frac{3}{4}$ "	$2\frac{1}{2}$ "
$2\frac{5}{8}$ "	3"	$3\frac{1}{4}$ "	4"	$\frac{3}{8}$ "	$4\frac{1}{2}$ "	$2\frac{9}{16}$ "	$2\frac{5}{8}$ "	$2\frac{1}{4}$ "	$6\frac{1}{4}$ "	6"	$2\frac{7}{8}$ "	$2\frac{5}{8}$ "
$2\frac{3}{4}$ "	$3\frac{1}{8}$ "	$3\frac{1}{2}$ "	$4\frac{1}{8}$ "	$\frac{3}{8}$ "	$4\frac{3}{4}$ "	$2\frac{11}{16}$ "	$2\frac{3}{4}$ "	$2\frac{3}{8}$ "	$6\frac{5}{8}$ "	$6\frac{1}{4}$ "	3"	$2\frac{3}{4}$ "
$2\frac{7}{8}$ "	$3\frac{1}{4}$ "	$3\frac{5}{8}$ "	$4\frac{3}{8}$ "	$\frac{3}{8}$ "	5"	$2\frac{13}{16}$ "	$2\frac{7}{8}$ "	$2\frac{3}{8}$ "	$6\frac{7}{8}$ "	$6\frac{1}{2}$ "	$3\frac{1}{8}$ "	$2\frac{7}{8}$ "
3"	$3\frac{3}{8}$ "	$3\frac{3}{4}$ "	$4\frac{1}{2}$ "	$\frac{3}{8}$ "	$5\frac{1}{4}$ "	$2\frac{15}{16}$ "	3"	$2\frac{1}{2}$ "	$7\frac{1}{8}$ "	$6\frac{3}{4}$ "	$3\frac{1}{4}$ "	3"

WEIGHTS OF STEEL BOLTS AND NUTS, AND STEEL BARS

Length Inches	Diameter of Bolt.																	
	$\frac{1}{4}$	$\frac{3}{8}$	$\frac{1}{2}$	$\frac{5}{8}$	$\frac{3}{4}$	$\frac{7}{8}$	1	$1\frac{1}{8}$	$1\frac{1}{4}$	$1\frac{3}{8}$	$1\frac{1}{2}$	$1\frac{5}{8}$	$1\frac{3}{4}$	$1\frac{7}{8}$	2			
$\frac{3}{4}$	0.033	0.085	0.175															
$\frac{7}{8}$	0.034	0.089	0.182															
1	0.036	0.093	0.189	0.335														
$1\frac{1}{8}$	0.038	0.097	0.196	0.346	0.553													
$1\frac{1}{4}$	0.040	0.101	0.203	0.357	0.568	0.849												
$1\frac{3}{8}$	0.041	0.105	0.210	0.367	0.584	0.870	1.234											
$1\frac{1}{2}$	0.041	0.116	0.230	0.391	0.612	0.899	1.26	1.61										
$1\frac{3}{4}$	0.044	0.125	0.244	0.414	0.643	0.941	1.32	1.68	2.33									
2	0.048	0.132	0.258	0.435	0.675	0.984	1.37	1.75	2.43	3.10								
$2\frac{1}{4}$	0.052	0.140	0.272	0.457	0.706	1.02	1.43	1.82	2.52	3.20	4.02							
$2\frac{1}{2}$	0.055	0.147	0.286	0.478	0.737	1.06	1.48	1.89	2.60	3.31	4.12	4.77						
$2\frac{3}{4}$	0.058	0.156	0.300	0.501	0.768	1.11	1.54	1.96	2.68	3.41	4.25	4.91	5.87					
3	0.062	0.163	0.314	0.522	0.800	1.15	1.59	2.03	2.78	3.52	4.40	5.06	6.04	7.15				
$3\frac{1}{2}$	0.069	0.178	0.342	0.565	0.862	1.23	1.71	2.17	2.95	3.73	4.65	5.35	6.38	7.54	8.87			
4	0.076	0.194	0.370	0.609	0.925	1.32	1.82	2.31	3.13	3.94	4.90	5.65	6.72	7.94	9.32			
$4\frac{1}{2}$	0.083	0.209	0.398	0.652	0.987	1.40	1.93	2.45	3.30	4.15	5.12	5.94	7.06	8.33	9.77			
5	0.090	0.225	0.426	0.696	1.05	1.49	2.04	2.60	3.47	4.36	5.40	6.24	7.40	8.72	10.22			
$5\frac{1}{2}$	0.097	0.240	0.454	0.739	1.11	1.57	2.15	2.74	3.65	4.57	5.62	6.53	7.74	9.11	10.67			
6	0.104	0.256	0.482	0.783	1.17	1.66	2.26	2.88	3.82	4.78	5.90	6.82	8.08	9.50	11.10			
$6\frac{1}{2}$	0.111	0.271	0.510	0.826	1.23	1.74	2.37	3.02	4.00	4.99	6.15	7.12	8.42	9.89	11.55			
7	0.118	0.287	0.538	0.870	1.30	1.83	2.48	3.16	4.17	5.20	6.40	7.41	8.76	10.28	12.00			
$7\frac{1}{2}$	0.125	0.302	0.566	0.913	1.36	1.91	2.59	3.30	4.34	5.41	6.62	7.71	9.14	10.67	12.45			
8	0.132	0.318	0.594	0.957	1.42	2.00	2.70	3.44	4.52	5.62	6.90	8.00	9.44	11.06	12.90			
$8\frac{1}{2}$	0.139	0.333	0.622	1.000	1.48	2.08	2.82	3.58	4.69	5.83	7.15	8.29	9.78	11.45	13.35			
9	0.146	0.349	0.650	1.04	1.55	2.17	2.93	3.72	4.87	6.04	7.40	8.59	10.12	11.84	13.80			
$9\frac{1}{2}$	0.157	0.364	0.678	1.08	1.61	2.25	3.04	3.86	5.04	6.25	7.62	8.88	10.46	12.23	14.25			
10	0.160	0.380	0.706	1.13	1.67	2.34	3.15	4.00	5.21	6.46	7.90	9.18	10.81	12.63	14.70			
11	0.174	0.411	0.762	1.21	1.80	2.51	3.37	4.28	5.56	6.88	8.40	9.76	11.49	13.41	15.54			
12	0.188	0.442	0.818	1.30	1.92	2.68	3.61	4.56	5.91	7.30	8.90	10.35	12.17	14.19	16.43			



Weight of Steel Bars.

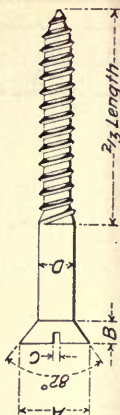
Length of Bar Feet	Diameter of Bar.																	
	$\frac{1}{4}$	$\frac{3}{8}$	$\frac{1}{2}$	$\frac{5}{8}$	$\frac{3}{4}$	$\frac{7}{8}$	1	$1\frac{1}{8}$	$1\frac{1}{4}$	$1\frac{3}{8}$	$1\frac{1}{2}$	$1\frac{5}{8}$	$1\frac{3}{4}$	$1\frac{7}{8}$	2			
1	0.167	0.376	0.668	1.04	1.50	2.04	2.67	3.38	4.17	5.04	6.00	7.05	8.17	9.38	10.68			
2	0.334	0.752	1.336	2.08	3.00	4.08	5.34	6.76	8.34	10.08	12.00	14.10	16.34	18.76	21.36			
3	0.501	1.128	2.004	3.12	4.50	6.12	8.01	10.14	12.51	15.12	18.00	21.15	24.51	28.14	32.04			
4	0.668	1.504	2.672	4.16	6.00	8.16	10.68	13.52	16.68	20.16	24.00	28.20	32.68	37.52	42.72			
5	0.835	1.880	3.340	5.20	7.50	10.20	13.35	16.90	20.85	25.20	30.00	35.25	40.85	46.90	53.40			
6	1.002	2.256	4.008	6.24	9.00	12.24	16.02	20.28	25.02	30.24	36.00	42.30	49.02	56.28	64.08			
7	1.169	2.632	4.676	7.28	10.50	14.28	18.69	23.66	29.19	35.28	42.00	49.35	57.19	65.66	74.76			
8	1.336	3.008	5.344	8.32	12.00	16.32	21.36	27.04	33.36	40.32	48.00	56.40	65.36	75.04	85.44			
9	1.503	3.384	6.012	9.36	13.50	18.36	24.03	30.42	37.53	45.36	54.00	63.45	73.53	84.42	96.12			
10	1.670	3.760	6.680	10.40	15.00	20.40	26.70	33.80	41.70	50.40	60.00	70.50	81.70	93.80	106.8			

When the length L of bolt is over 12 inches, compute by using table of weight of steel bars. Example: Weight of 1 inch bolt, 18 inches long = weight of 6 inches long bolt + weight of 1 foot long bar.

DIMENSIONS AND WEIGHTS OF WOOD SCREWS

Screw Numbers	A	B	C	D	Number of Threads Per Inch	Length, in Inches										Weight, in Pounds											
						1/4	3/8	1/2	5/8	3/4	7/8	1	1 1/4	1 1/2	1 3/4	2	2 1/4	2 1/2	2 3/4	3							
0				.0578	30	Gross .026 100 .019	.036 025																				
1				.0710	28	Gross .039 100 .027	.054 041	.069 058																			
2	.1631	.0454	.030	.0841	26	Gross .056 100 .039	.071 053	.087 067	.098																		
3	.1894	.0530	.032	.0973	24	Gross .078 100 .055	.103 073	.130 090	.155 108	.180 125	.203 141	.230 159															
4	.2158	.0605	.034	.1105	22	Gross .099 100 .068	.135 092	.165 117	.195 144	.230 161	.264 193	.299 222	.338 255	.378 295	.418 335	.458 375	.498 415	.538 455	.578 495	.618 535	.658 575	.698 615	.738 655	.778 695	.818 735	.858 775	.898 815
5	.2421	.0681	.036	.1236	20	Gross .116 100 .085	.152 102	.182 132	.212 162	.242 192	.272 222	.302 252	.332 282	.362 312	.392 342	.422 372	.452 402	.482 432	.512 462	.542 492	.572 522	.602 552	.632 582	.662 612	.692 642	.722 672	.752 702
6	.2684	.0757	.039	.1368	18	Gross .141 100 .100	.177 127	.207 157	.237 187	.267 217	.297 247	.327 277	.357 307	.387 337	.417 367	.447 397	.477 427	.507 457	.537 487	.567 517	.597 547	.627 577	.657 607	.687 637	.717 667	.747 697	.777 727
7	.2947	.0832	.041	.1500	17	Gross .173 100 .122	.209 151	.239 181	.269 201	.299 231	.329 261	.359 291	.389 321	.419 351	.449 381	.479 411	.509 441	.539 471	.569 501	.599 531	.629 561	.659 591	.689 621	.719 651	.749 681	.779 711	.809 741
8	.3210	.0908	.043	.1631	15	Gross .208 100 .148	.244 184	.274 214	.304 244	.334 274	.364 304	.394 334	.424 364	.454 394	.484 424	.514 454	.544 484	.574 514	.604 544	.634 574	.664 604	.694 634	.724 664	.754 694	.784 724	.814 754	.844 784
9	.3474	.0984	.045	.1763	14	Gross .248 100 .168	.284 208	.314 238	.344 268	.374 298	.404 328	.434 358	.464 388	.494 418	.524 448	.554 478	.584 508	.614 538	.644 568	.674 598	.704 628	.734 658	.764 688	.794 718	.824 748	.854 778	.884 808
10	.3737	.1059	.048	.1894	13	Gross .2958 100 .2054	.331 241	.361 271	.391 301	.421 331	.451 361	.481 391	.511 421	.541 451	.571 481	.601 511	.631 541	.661 571	.691 601	.721 631	.751 661	.781 691	.811 721	.841 751	.871 781	.901 811	.931 841
11	.4000	.1134	.050	.2026	12.5	Gross .3393 100 .2355	.375 265	.405 295	.435 325	.465 355	.495 385	.525 415	.555 445	.585 475	.615 505	.645 535	.675 565	.705 595	.735 625	.765 655	.795 685	.825 715	.855 745	.885 775	.915 805	.945 835	.975 865
12	.4263	.1210	.052	.2158	12	Gross .3859 100 .2679	.421 301	.451 331	.481 361	.511 391	.541 421	.571 451	.601 481	.631 511	.661 541	.691 571	.721 601	.751 631	.781 661	.811 691	.841 721	.871 751	.901 781	.931 811	.961 841	.991 871	1.021 901
13	.4427	.1286	.055	.2289	11	Gross .4356 100 .3024	.471 341	.501 371	.531 401	.561 431	.591 461	.621 491	.651 521	.681 551	.711 581	.741 611	.771 641	.801 671	.831 701	.861 731	.891 761	.921 791	.951 821	.981 851	1.011 881	1.041 911	1.071 941
14	.4790	.1362	.057	.2421	10	Gross .4884 100 .3391	.524 381	.554 411	.584 441	.614 471	.644 501	.674 531	.704 561	.734 591	.764 621	.794 651	.824 681	.854 711	.884 741	.914 771	.944 801	.974 831	1.004 861	1.034 891	1.064 921	1.094 951	1.124 981
15	.5053	.1437	.059	.2552	9.5	Gross .5445 100 .3781	.580 431	.610 461	.640 491	.670 521	.700 551	.730 581	.760 611	.790 641	.820 671	.850 701	.880 731	.910 761	.940 791	.970 821	1.000 851	1.030 881	1.060 911	1.090 941	1.120 971	1.150 1.001	1.180 1.031
16	.5316	.1513	.061	.2684	9	Gross .6037 100 .4192	.639 471	.669 501	.699 531	.729 561	.759 591	.789 621	.819 651	.849 681	.879 711	.909 741	.939 771	.969 801	.999 831	1.029 861	1.059 891	1.089 921	1.119 951	1.149 981	1.179 1.011	1.209 1.041	1.239 1.071
17	.5579	.1589	.064	.2815	8.5	Gross .6662 100 .4626	.702 511	.732 541	.762 571	.792 601	.822 631	.852 661	.882 691	.912 721	.942 751	.972 781	1.002 811	1.032 841	1.062 871	1.092 901	1.122 931	1.152 961	1.182 991	1.212 1.021	1.242 1.051	1.272 1.081	1.302 1.111
18	.5842	.1665	.066	.2947	8	Gross .7319 100 .5082	.767 561	.797 591	.827 621	.857 651	.887 681	.917 711	.947 741	.977 771	1.007 801	1.037 831	1.067 861	1.097 891	1.127 921	1.157 951	1.187 981	1.217 1.011	1.247 1.041	1.277 1.071	1.307 1.101	1.337 1.131	1.367 1.161
20	.6368	.1816	.070	.3210	7.5	Gross .8731 100 .6063	.909 611	.939 641	.969 671	.999 701	1.029 731	1.059 761	1.089 791	1.119 821	1.149 851	1.179 881	1.209 911	1.239 941	1.269 971	1.299 1.001	1.329 1.031	1.359 1.061	1.389 1.091	1.419 1.121	1.449 1.151	1.479 1.181	1.509 1.211
22	.6895	.1967	.075	.3474	7.5	Gross .9271 100 .6503	.963 651	.993 681	1.023 711	1.053 741	1.083 771	1.113 801	1.143 831	1.173 861	1.203 891	1.233 921	1.263 951	1.293 981	1.323 1.011	1.353 1.041	1.383 1.071	1.413 1.101	1.443 1.131	1.473 1.161	1.503 1.191	1.533 1.221	1.563 1.251
24	.7421	.2118	.079	.3737	7	Gross .9571 100 .6803	.993 681	1.023 711	1.053 741	1.083 771	1.113 801	1.143 831	1.173 861	1.203 891	1.233 921	1.263 951	1.293 981	1.323 1.011	1.353 1.041	1.383 1.071	1.413 1.101	1.443 1.131	1.473 1.161	1.503 1.191	1.533 1.221	1.563 1.251	1.593 1.281
26	.7421	.1967	.084	.4000	6.5	Gross .9374 100 .6303	.973 631	1.003 661	1.033 691	1.063 721	1.093 751	1.123 781	1.153 811	1.183 841	1.213 871	1.243 901	1.273 931	1.303 961	1.333 991	1.363 1.021	1.393 1.051	1.423 1.081	1.453 1.111	1.483 1.141	1.513 1.171	1.543 1.201	1.573 1.231
28	.7948	.2118	.088	.4263	6.5	Gross .9948 100 .6803	1.030 681	1.060 711	1.090 741	1.120 771	1.150 801	1.180 831	1.210 861	1.240 891	1.270 921	1.300 951	1.330 981	1.360 1.011	1.390 1.041	1.420 1.071	1.450 1.101	1.480 1.131	1.510 1.161	1.540 1.191	1.570 1.221	1.600 1.251	1.630 1.281
30	.8474	.2270	.093	.4546	6	Gross .9948 100 .6803	1.030 681	1.060 711	1.090 741	1.120 771	1.150 801	1.180 831	1.210 861	1.240 891	1.270 921	1.300 951	1.330 981	1.360 1.011	1.390 1.041	1.420 1.071	1.450 1.101	1.480 1.131	1.510 1.161	1.540 1.191	1.570 1.221	1.600 1.251	1.630 1.281

Formula:
D = 0.01325N + 0.056
N = 0.01325
D = diameter of screw
N = number of screw



Formula:

 $D = 0.01325N + 0.036$ $N = \frac{D - 0.036}{0.01325}$ $D = \text{diameter of screw}$ $N = \text{number of screw}$

Note: For weight of brass screws add 7.9 per cent to above weights.

Asa S. Cook Co.'s Standard. Contributed by Dwight Gerber, MACHINERY'S Data Sheet No. 78.

TAP DRILLS FOR "V" THREADS.

Tap.	Drill.	Tap.	Drill.	Tap.	Drill.	Tap.	Drill.
$\frac{1}{8}$ " —60	55	※ 5 —32	40	※ 8 —36	28	※ 11 —28	20
$\frac{1}{8}$ " —64	55	※ 5 —36	39	※ 8 —40	28	※ 11 —30	19
$\frac{1}{8}$ " —72	55	※ 5 —40	38	※ 8 $\frac{1}{2}$ —24	30	※ 11 —32	18
※ 1 —56	54	※ 5 —44	37	※ 8 $\frac{1}{2}$ —28	29	※ 11 —36	17
※ 1 —60	54	$\frac{1}{8}$ " —30	41	※ 8 $\frac{1}{2}$ —30	29	※ 11 —40	17
※ 1 —64	54	$\frac{1}{8}$ " —32	40	※ 8 $\frac{1}{2}$ —32	28	$\frac{1}{4}$ " —24	21
※ 1 —72	54	$\frac{1}{8}$ " —36	38	※ 8 $\frac{1}{2}$ —36	27	$\frac{1}{4}$ " —28	20
※ 1 $\frac{1}{2}$ —56	52	$\frac{1}{8}$ " —40	37	※ 8 $\frac{1}{2}$ —40	27	$\frac{1}{4}$ " —30	19
※ 1 $\frac{1}{2}$ —60	52	$\frac{1}{8}$ " —44	36	$\frac{1}{4}$ " —24	30	$\frac{1}{4}$ " —32	18
※ 1 $\frac{1}{2}$ —64	52	※ 5 $\frac{1}{2}$ —30	38	$\frac{1}{4}$ " —28	29	$\frac{1}{4}$ " —36	17
※ 1 $\frac{1}{2}$ —72	51	※ 5 $\frac{1}{2}$ —32	37	$\frac{1}{4}$ " —30	29	$\frac{1}{4}$ " —40	17
$\frac{3}{4}$ " —56	52	※ 5 $\frac{1}{2}$ —36	36	$\frac{1}{4}$ " —32	28	※ 11 $\frac{1}{2}$ —24	19
$\frac{3}{4}$ " —60	52	※ 5 $\frac{1}{2}$ —40	35	$\frac{1}{4}$ " —36	27	※ 11 $\frac{1}{2}$ —28	18
$\frac{3}{4}$ " —64	52	※ 5 $\frac{1}{2}$ —44	35	$\frac{1}{4}$ " —40	27	※ 11 $\frac{1}{2}$ —30	17
$\frac{3}{4}$ " —72	51	※ 6 —30	36	※ 9 —24	29	※ 11 $\frac{1}{2}$ —32	16
※ 2 —48	50	※ 6 —32	35	※ 9 —28	28	※ 11 $\frac{1}{2}$ —36	15
※ 2 —56	49	※ 6 —36	34	※ 9 —30	27	※ 11 $\frac{1}{2}$ —40	15
※ 2 —60	49	※ 6 —40	33	※ 9 —32	25	※ 12 —20	18
※ 2 —64	48	$\frac{5}{8}$ " —30	35	※ 9 —36	24	※ 12 —22	17
※ 2 $\frac{1}{2}$ —48	47	$\frac{5}{8}$ " —32	34	※ 9 —40	24	※ 12 —24	16
※ 2 $\frac{1}{2}$ —56	46	$\frac{5}{8}$ " —36	33	※ 9 $\frac{1}{2}$ —24	27	※ 12 —28	15
※ 2 $\frac{1}{2}$ —60	46	$\frac{5}{8}$ " —40	32	※ 9 $\frac{1}{2}$ —28	26	※ 12 —30	15
$\frac{5}{8}$ " —48	47	※ 6 $\frac{1}{2}$ —30	34	※ 9 $\frac{1}{2}$ —30	24	※ 12 —32	14
$\frac{5}{8}$ " —56	46	※ 6 $\frac{1}{2}$ —32	33	※ 9 $\frac{1}{2}$ —32	23	※ 12 —36	13
$\frac{5}{8}$ " —60	46	※ 6 $\frac{1}{2}$ —36	32	※ 9 $\frac{1}{2}$ —36	22	※ 12 —40	13
※ 3 —40	47	※ 6 $\frac{1}{2}$ —40	31	※ 9 $\frac{1}{2}$ —40	22	$\frac{7}{8}$ " —20	20
※ 3 —48	45	※ 7 —28	33	$\frac{1}{8}$ " —24	27	$\frac{7}{8}$ " —22	19
※ 3 —56	44	※ 7 —30	32	$\frac{1}{8}$ " —28	26	$\frac{7}{8}$ " —24	18
※ 3 $\frac{1}{2}$ —40	48	※ 7 —32	32	$\frac{1}{8}$ " —30	24	$\frac{7}{8}$ " —28	17
※ 3 $\frac{1}{2}$ —48	46	※ 7 —36	30	$\frac{1}{8}$ " —32	23	$\frac{7}{8}$ " —30	16
※ 3 $\frac{1}{2}$ —56	45	※ 7 —40	29	$\frac{1}{8}$ " —36	22	$\frac{7}{8}$ " —32	16
$\frac{7}{8}$ " —32	45	※ 7 $\frac{1}{2}$ —28	32	$\frac{1}{8}$ " —40	22	$\frac{7}{8}$ " —36	15
$\frac{7}{8}$ " —36	44	※ 7 $\frac{1}{2}$ —30	31	※ 10 —24	27	$\frac{7}{8}$ " —40	15
$\frac{7}{8}$ " —40	43	※ 7 $\frac{1}{2}$ —32	30	※ 10 —28	26	※ 12 $\frac{1}{2}$ —20	16
$\frac{7}{8}$ " —44	43	※ 7 $\frac{1}{2}$ —36	29	※ 10 —30	24	※ 12 $\frac{1}{2}$ —22	16
$\frac{7}{8}$ " —48	42	※ 7 $\frac{1}{2}$ —40	29	※ 10 —32	23	※ 12 $\frac{1}{2}$ —24	15
※ 4 —32	45	$\frac{5}{8}$ " —28	32	※ 10 —36	22	※ 12 $\frac{1}{2}$ —28	14
※ 4 —36	44	$\frac{5}{8}$ " —30	31	※ 10 —40	22	※ 12 $\frac{1}{2}$ —30	13
※ 4 —40	43	$\frac{5}{8}$ " —32	30	※ 10 $\frac{1}{2}$ —24	24	※ 12 $\frac{1}{2}$ —32	12
※ 4 —44	43	$\frac{5}{8}$ " —36	29	※ 10 $\frac{1}{2}$ —28	23	※ 12 $\frac{1}{2}$ —36	11
※ 4 $\frac{1}{2}$ —32	42	$\frac{5}{8}$ " —40	29	※ 10 $\frac{1}{2}$ —30	22	※ 12 $\frac{1}{2}$ —40	11
※ 4 $\frac{1}{2}$ —36	41	※ 8 —24	31	※ 10 $\frac{1}{2}$ —32	21	※ 13 —20	14
※ 4 $\frac{1}{2}$ —40	40	※ 8 —28	30	※ 10 $\frac{1}{2}$ —36	20	※ 13 —22	14
※ 4 $\frac{1}{2}$ —44	40	※ 8 —30	30	※ 10 $\frac{1}{2}$ —40	20	※ 13 —24	13
※ 5 —30	41	※ 8 —32	29	※ 11 —24	21	※ 13 —28	12

TAP DRILLS FOR "V" THREADS (Continued).

Tap	Drill.	Tap.	Drill.	Tap.	Drill.	Tap	Drill.
※ 13 —30	11	※ 15 —20	7	※ 19 —20	C	※ 26 —16	$\frac{3}{16}$ "
※ 13 —32	10	※ 15 —22	6	※ 19 —24	D	※ 26 —18	Q
※ 13 —36	9	※ 15 —24	5	※ 19 —30	$\frac{1}{4}$ "	※ 26 —20	$\frac{1}{8}$ "
※ 13 —40	9	※ 15 —28	4	$\frac{5}{16}$ " —16	$\frac{3}{16}$ "	※ 28 —14	$\frac{1}{8}$ "
$\frac{1}{16}$ " —20	10	※ 15 —30	3	$\frac{5}{16}$ " —18	$\frac{1}{4}$ "	※ 28 —16	S
$\frac{1}{16}$ " —22	10	※ 15 $\frac{1}{8}$ —18	6	$\frac{5}{16}$ " —20	$\frac{1}{4}$ "	※ 28 —18	S
$\frac{1}{16}$ " —24	9	※ 15 $\frac{1}{8}$ —20	5	$\frac{5}{16}$ " —24	F	※ 28 —20	$\frac{3}{16}$ "
$\frac{1}{16}$ " —28	9	※ 15 $\frac{1}{8}$ —22	4	$\frac{5}{16}$ " —30	F	$\frac{1}{8}$ " —14	$\frac{1}{8}$ "
$\frac{1}{16}$ " —30	8	※ 15 $\frac{1}{8}$ —24	3	※ 20 —16	C	$\frac{1}{8}$ " —16	$\frac{1}{8}$ "
$\frac{1}{16}$ " —32	8	※ 15 $\frac{1}{8}$ —28	2	※ 20 —18	$\frac{1}{4}$ "	$\frac{1}{8}$ " —18	$\frac{3}{16}$ "
$\frac{1}{16}$ " —36	7	※ 15 $\frac{1}{8}$ —30	2	※ 20 —20	F	$\frac{1}{8}$ " —20	$\frac{3}{16}$ "
$\frac{1}{16}$ " —40	7	$\frac{1}{16}$ " —18	6	※ 20 —22	F	$\frac{1}{8}$ " —12	$\frac{3}{16}$ "
※ 13 $\frac{1}{8}$ —20	10	$\frac{1}{16}$ " —20	5	※ 20 —24	G	$\frac{1}{8}$ " —13	$\frac{3}{16}$ "
※ 13 $\frac{1}{8}$ —22	10	$\frac{1}{16}$ " —22	4	※ 21 —16	$\frac{1}{4}$ "	$\frac{1}{8}$ " —14	$\frac{1}{8}$ "
※ 13 $\frac{1}{8}$ —24	9	$\frac{1}{16}$ " —24	3	※ 21 —18	F	$\frac{1}{8}$ " —16	$\frac{1}{8}$ "
※ 13 $\frac{1}{8}$ —28	9	$\frac{1}{16}$ " —28	2	※ 21 —20	G	$\frac{1}{8}$ " —18	$\frac{3}{16}$ "
※ 13 $\frac{1}{8}$ —30	8	$\frac{1}{16}$ " —30	2	※ 21 —22	G	$\frac{1}{8}$ " —20	$\frac{3}{16}$ "
※ 13 $\frac{1}{8}$ —32	8	※ 16 —16	8	※ 21 —24	H	$\frac{1}{8}$ " —12	$\frac{3}{16}$ "
※ 13 $\frac{1}{8}$ —36	7	※ 16 —18	6	※ 22 —16	H	$\frac{1}{8}$ " —14	$\frac{3}{16}$ "
※ 13 $\frac{1}{8}$ —40	7	※ 16 —20	5	※ 22 —18	J	$\frac{1}{8}$ " —10	$\frac{1}{8}$ "
※ 14 —20	9	※ 16 —22	4	※ 22 —20	$\frac{3}{16}$ "	$\frac{1}{8}$ " —11	$\frac{3}{16}$ "
※ 14 —22	9	※ 16 —24	3	※ 22 —22	L	$\frac{1}{8}$ " —12	$\frac{3}{16}$ "
※ 14 —24	8	※ 16 —28	2	※ 22 —24	$\frac{1}{4}$ "	$\frac{1}{8}$ " —11	$\frac{1}{8}$ "
※ 14 —28	8	※ 16 —30	1	※ 23 —16	J	$\frac{1}{8}$ " —12	$\frac{3}{16}$ "
※ 14 —30	7	$\frac{9}{32}$ " —16	4	※ 23 —18	$\frac{3}{16}$ "	$\frac{1}{8}$ " —10	$\frac{3}{16}$ "
※ 14 —32	7	$\frac{9}{32}$ " —18	2	※ 23 —20	L	$\frac{1}{8}$ " —12	$\frac{5}{16}$ "
※ 14 —36	6	$\frac{9}{32}$ " —20	1	※ 23 —22	M	$\frac{1}{8}$ " —10	$\frac{1}{8}$ "
※ 14 —40	6	$\frac{9}{32}$ " —24	1	※ 23 —24	$\frac{1}{4}$ "	$\frac{1}{8}$ " —9	$\frac{3}{16}$ "
※ 14 $\frac{1}{8}$ —20	7	$\frac{9}{32}$ " —28	$\frac{1}{16}$ "	※ 24 —14	L	$\frac{1}{8}$ " —10	$\frac{4}{16}$ "
※ 14 $\frac{1}{8}$ —22	6	$\frac{9}{32}$ " —30	$\frac{1}{16}$ "	※ 24 —16	$\frac{1}{16}$ "	$\frac{1}{8}$ " —9	$\frac{3}{16}$ "
※ 14 $\frac{1}{8}$ —24	5	※ 17 —16	4	※ 24 —18	N	1" —7	$\frac{1}{16}$ "
※ 14 $\frac{1}{8}$ —28	4	※ 17 —18	2	※ 24 —20	$\frac{1}{8}$ "	1" —8	$\frac{3}{16}$ "
※ 14 $\frac{1}{8}$ —30	3	※ 17 —20	1	※ 24 —22	O	1 $\frac{1}{8}$ " —7	$\frac{3}{16}$ "
※ 14 $\frac{1}{8}$ —32	3	※ 17 —24	1	※ 24 —24	P	1 $\frac{1}{8}$ " —8	$\frac{3}{16}$ "
※ 14 $\frac{1}{8}$ —36	3	※ 17 —28	$\frac{1}{16}$ "	$\frac{3}{16}$ " —14	M	1 $\frac{1}{4}$ " —7	$\frac{1}{16}$ "
※ 14 $\frac{1}{8}$ —40	2	※ 17 —30	$\frac{1}{16}$ "	$\frac{3}{16}$ " —16	$\frac{1}{4}$ "	1 $\frac{1}{4}$ " —8	$\frac{1}{16}$ "
$\frac{1}{4}$ " —20	7	※ 18 —16	2	$\frac{3}{16}$ " —18	$\frac{1}{8}$ "	1 $\frac{1}{8}$ " —6	$\frac{1}{16}$ "
$\frac{1}{4}$ " —22	6	※ 18 —18	1	$\frac{3}{16}$ " —20	O	1 $\frac{1}{8}$ " —6	$\frac{1}{16}$ "
$\frac{1}{4}$ " —24	5	※ 18 —20	$\frac{1}{16}$ "	$\frac{3}{16}$ " —22	P	1 $\frac{1}{8}$ " —5	$\frac{1}{16}$ "
$\frac{1}{4}$ " —28	4	※ 18 —22	B	$\frac{3}{16}$ " —24	$\frac{3}{16}$ "	1 $\frac{1}{8}$ " —5	$\frac{1}{16}$ "
$\frac{1}{4}$ " —30	3	※ 18 —24	B	※ 25 —14	$\frac{1}{4}$ "	1 $\frac{3}{8}$ " —4	$\frac{1}{16}$ "
$\frac{1}{4}$ " —32	3	※ 18 —28	C	※ 25 —16	$\frac{5}{16}$ "	1 $\frac{3}{8}$ " —4 $\frac{1}{2}$	$\frac{1}{16}$ "
$\frac{1}{4}$ " —36	2	※ 18 —30	C	※ 25 —18	$\frac{3}{4}$ "	2" —4	$\frac{1}{16}$ "
$\frac{1}{4}$ " —40	2	※ 19 —16	$\frac{1}{16}$ "	※ 25 —20	$\frac{3}{4}$ "	2" —4 $\frac{1}{2}$	$\frac{1}{16}$ "
※ 15 —18	8	※ 19 —18	B	※ 26 —14	$\frac{5}{16}$ "

Contributed by Ramsey & Thornley Machine Co., MACHINERY'S Data Sheet No. 32.

Explanatory note: Page 3.

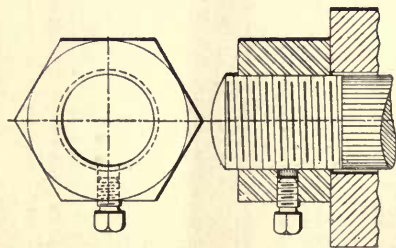


Fig. 1.

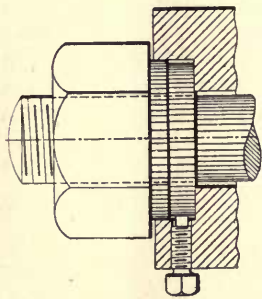


Fig. 2.

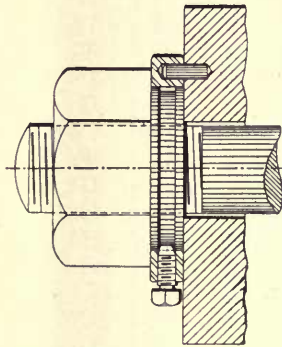


Fig. 3.

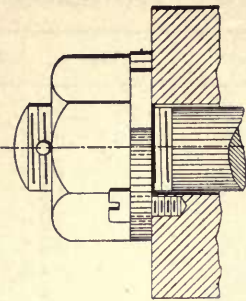
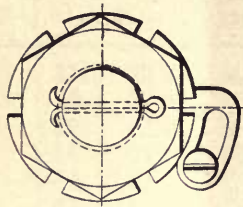


Fig. 4.

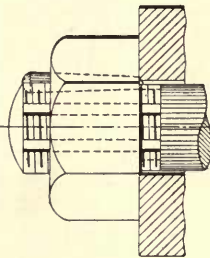
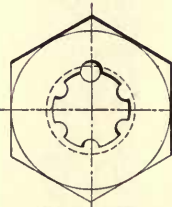


Fig. 7.

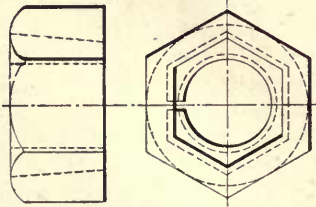


Fig. 8.

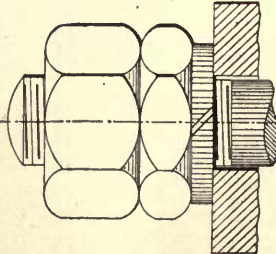


Fig. 5.

LOCK NUTS USED IN ENGINEERING PRACTICE—II

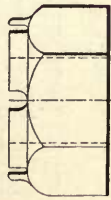
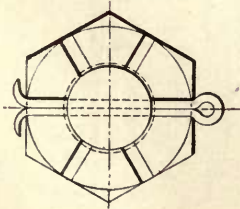


Fig. 9.

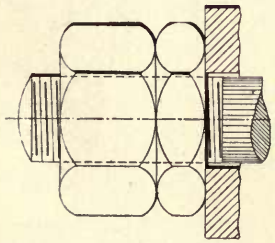


Fig. 10.

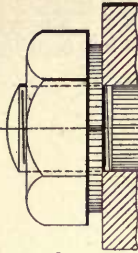
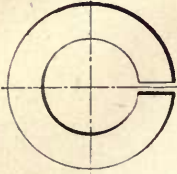


Fig. 11.

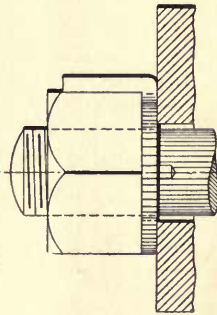


Fig. 12.

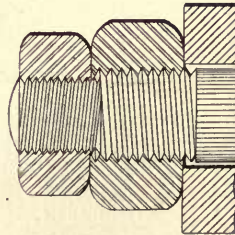


Fig. 13.

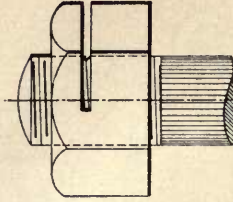


Fig. 14.

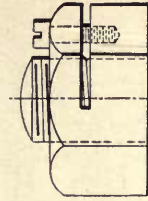


Fig. 15.

LOCK NUTS USED IN ENGINEERING PRACTICE—III

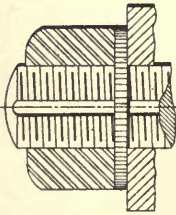
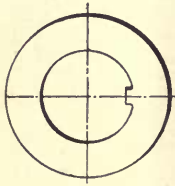


Fig. 16.

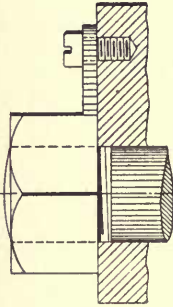
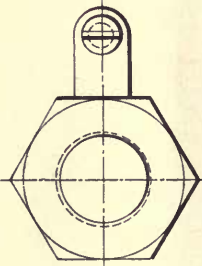


Fig. 17.

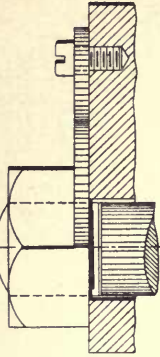
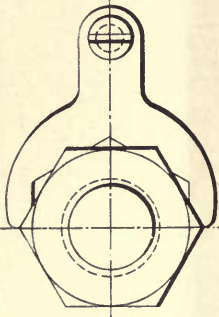


Fig. 18.

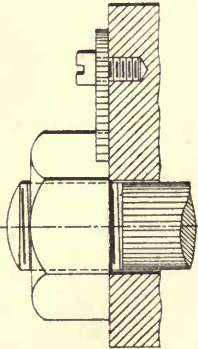
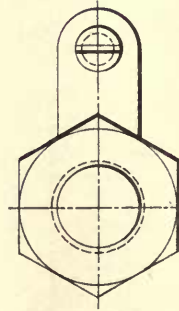


Fig. 19.

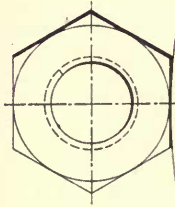


Fig. 20.

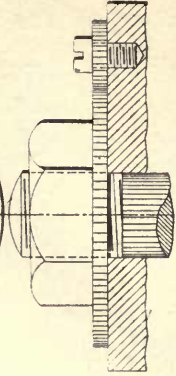
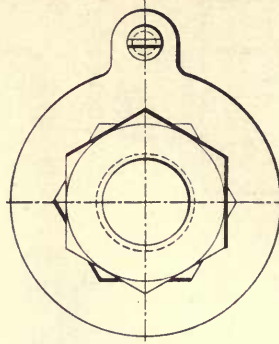


Fig. 21.

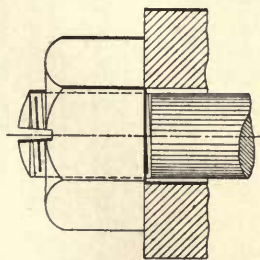


Fig. 22.

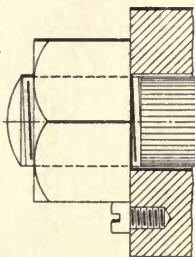
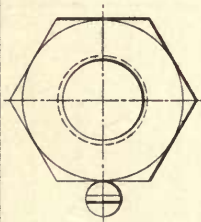


Fig. 23.

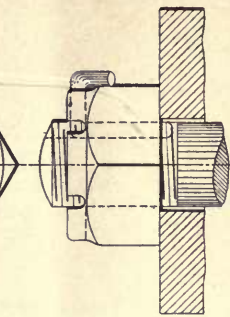
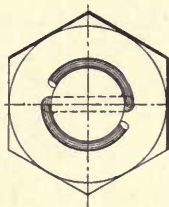


Fig. 24.

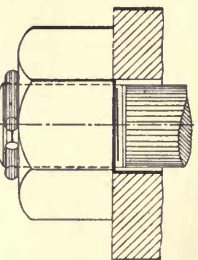
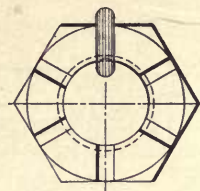


Fig. 25.

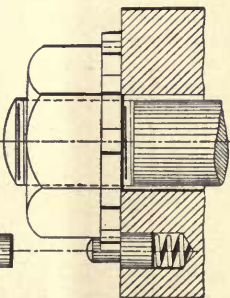
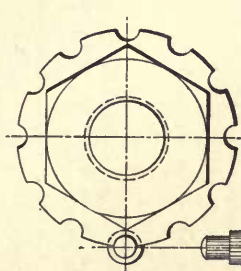


Fig. 26.

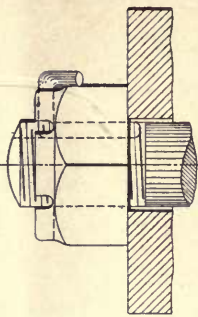
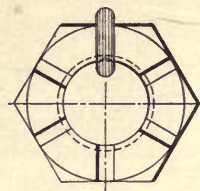
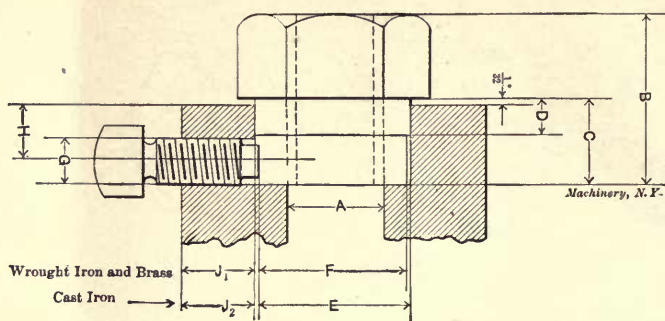


Fig. 27.

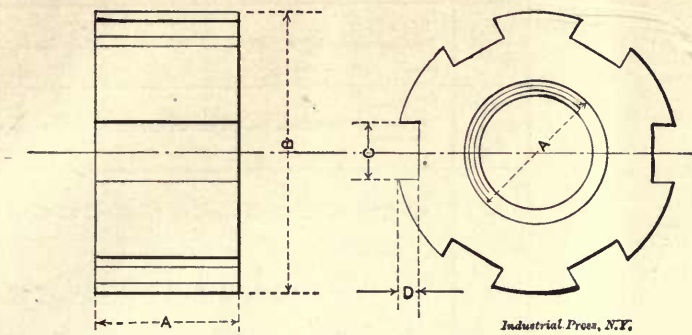
LOCK NUTS.



A	B	C	D	E	F	G	H	J ₁	J ₂
								Never Less.	
1/2"	7/8"	7/8"	1 1/8"	1 3/8"	2 3/8"	1 1/4"	1 5/8"	1 5/8"	3/8"
9/16	3/4	1 1/8	1 1/8	7/8	2 7/8	1 1/2	1 5/8	1 5/8	3/8
5/8	1 1/8	1 1/8	1 3/8	1	3 1/8	1 3/4	1 5/8	1 5/8	3/8
3/4	1 1/4	1 3/8	1 3/4	1 1/8	1 5/8	1 5/8	1 5/8	1 5/8	1 1/8
7/8	1 3/8	1 3/8	1 3/4	1 3/8	1 11/8	1 5/8	1 5/8	1 5/8	1 1/8
1	1 5/8	1 5/8	1 3/4	1 1 3/8	1 1 1/8	1 5/8	1 5/8	1 5/8	1 1/8
1 1/8	1 1 3/8	1 5/8	1 3/4	1 3/4	1 1 1/8	1 5/8	1 5/8	1 5/8	1 1/8
1 1/4	2	1 3/4	1 3/4	1 1 5/8	1 7/8	1 5/8	1 5/8	1 5/8	1 1/8
1 3/8	2 1/8	1 3/4	1 3/4	2 1/8	2 1/8	1 5/8	1 5/8	1 5/8	1 1/8
1 1/2	2 3/8	1 3/4	1 3/4	2 1/8	2 1/4	1 5/8	1 5/8	1 5/8	1 1/8
1 5/8	2 1 3/8	1 3/4	1 3/4	2 1/8	2 1 3/8	1 5/8	1 5/8	1 5/8	1 1/8
1 3/4	2 3/4	1 3/4	1 3/4	2 1 1/8	2 5/8	1 5/8	1 5/8	1 5/8	1 1/8
1 7/8	2 1 5/8	1 3/4	1 3/4	2 7/8	2 1 1/8	1 5/8	1 5/8	1 5/8	1 1/8
2	3 1/8	1 3/4	1 3/4	3 1/8	3	1 5/8	1 5/8	1 5/8	1 1/8
2 1/4	3 1/4	1 3/4	1 3/4	3 1 3/8	3 3/8	1 5/8	1 5/8	1 5/8	1 1/8
2 1/2	3 3/8	1 3/4	1 3/4	3 3/4	3 1 1/8	1 5/8	1 5/8	1 5/8	1 1/8
2 3/4	1 1 1/4	1 3/4	1 3/4	4 1/8	4 1 1/8	1 5/8	1 5/8	1 5/8	1 1/8
3	1 5/8	1 3/4	1 3/4	4 1/2	4 1 3/8	1 5/8	1 5/8	1 5/8	1 1/8
3 1/4	5	1 3/4	1 3/4	4 7/8	4 1 1/2	1 5/8	1 5/8	1 5/8	1
3 1/2	5 3/8	1 3/4	1 3/4	5 1/4	5 3/8	1 5/8	1 5/8	1 5/8	1
3 3/4	5 3/4	1 3/4	1 3/4	5 5/8	5 1 1/8	1 5/8	1 5/8	1 5/8	1
4	6 1/8	1 3/4	1 3/4	6	5 1 1/8	1 5/8	1 5/8	1 5/8	1

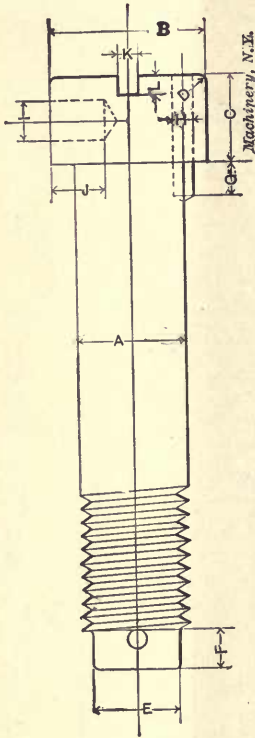
STANDARD ROUND SLOTTED NUTS.

(Number of slots varies from four up.)



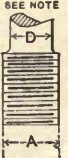
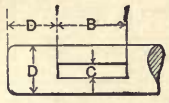
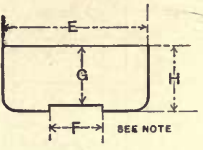
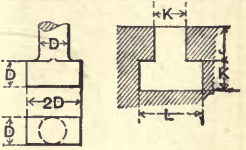
A	B	C	D	A	B	C	D
$\frac{1}{8}$ "	$1\frac{1}{8}$ "	$\frac{5}{16}$ "	$\frac{1}{8}$ "	6"	$10\frac{1}{8}$ "	$1\frac{1}{8}$ "	$\frac{1}{32}$ "
$\frac{1}{4}$ "	$1\frac{1}{4}$ "	$\frac{3}{8}$ "	$\frac{1}{4}$ "	$6\frac{1}{4}$ "	$10\frac{1}{4}$ "	$1\frac{1}{4}$ "	$\frac{1}{16}$ "
$\frac{3}{8}$ "	$1\frac{3}{8}$ "	$\frac{1}{2}$ "	$\frac{3}{8}$ "	6"	11"	$1\frac{1}{8}$ "	$\frac{3}{16}$ "
$1\frac{1}{8}$ "	$2\frac{1}{8}$ "	$\frac{5}{8}$ "	$\frac{1}{2}$ "	$6\frac{1}{2}$ "	$11\frac{1}{8}$ "	$1\frac{1}{4}$ "	$\frac{9}{16}$ "
$1\frac{1}{4}$ "	$2\frac{1}{4}$ "	$\frac{3}{4}$ "	$\frac{5}{8}$ "	7"	$11\frac{1}{4}$ "	$1\frac{3}{8}$ "	$\frac{1}{2}$ "
$1\frac{3}{8}$ "	$2\frac{3}{8}$ "	$\frac{7}{8}$ "	$\frac{3}{4}$ "	$7\frac{1}{4}$ "	$12\frac{1}{4}$ "	$1\frac{1}{2}$ "	$\frac{5}{8}$ "
$1\frac{1}{2}$ "	$2\frac{1}{2}$ "	$1\frac{1}{8}$ "	$\frac{7}{8}$ "	7"	$12\frac{1}{2}$ "	$1\frac{5}{8}$ "	$\frac{11}{16}$ "
$1\frac{3}{4}$ "	$3\frac{1}{4}$ "	$1\frac{1}{4}$ "	$1\frac{1}{8}$ "	$7\frac{1}{2}$ "	13"	$1\frac{3}{4}$ "	$\frac{3}{4}$ "
$1\frac{7}{8}$ "	$3\frac{1}{8}$ "	$1\frac{3}{8}$ "	$\frac{1}{2}$ "	8"	$13\frac{1}{8}$ "	$1\frac{7}{8}$ "	$\frac{15}{16}$ "
$2\frac{1}{8}$ "	$3\frac{1}{8}$ "	$1\frac{1}{2}$ "	$\frac{3}{4}$ "	$8\frac{1}{4}$ "	$13\frac{1}{4}$ "	$1\frac{7}{8}$ "	$\frac{15}{16}$ "
$2\frac{1}{4}$ "	$4\frac{1}{4}$ "	$1\frac{5}{8}$ "	$\frac{7}{8}$ "	$8\frac{1}{2}$ "	$14\frac{1}{2}$ "	$1\frac{7}{8}$ "	$\frac{15}{16}$ "
$2\frac{3}{8}$ "	$4\frac{3}{8}$ "	$1\frac{3}{4}$ "	$1\frac{1}{4}$ "	9"	$14\frac{3}{4}$ "	$1\frac{7}{8}$ "	$\frac{15}{16}$ "
$2\frac{1}{2}$ "	$4\frac{1}{2}$ "	$1\frac{7}{8}$ "	$1\frac{1}{2}$ "	$9\frac{1}{4}$ "	$15\frac{1}{4}$ "	$1\frac{7}{8}$ "	$\frac{15}{16}$ "
$3\frac{1}{8}$ "	$5\frac{1}{8}$ "	$2\frac{1}{8}$ "	$1\frac{3}{4}$ "	9"	$15\frac{1}{2}$ "	$1\frac{7}{8}$ "	$\frac{15}{16}$ "
$3\frac{1}{4}$ "	$5\frac{1}{4}$ "	$2\frac{1}{4}$ "	$1\frac{7}{8}$ "	$9\frac{1}{2}$ "	$16\frac{1}{2}$ "	$1\frac{7}{8}$ "	$\frac{15}{16}$ "
$3\frac{3}{8}$ "	$6\frac{1}{8}$ "	$2\frac{3}{8}$ "	$1\frac{7}{8}$ "	10"	$16\frac{3}{4}$ "	$1\frac{7}{8}$ "	$\frac{15}{16}$ "
$3\frac{1}{2}$ "	$6\frac{1}{2}$ "	$2\frac{1}{2}$ "	$2\frac{1}{8}$ "	$10\frac{1}{4}$ "	$17\frac{1}{4}$ "	2"	$\frac{15}{16}$ "
$4\frac{1}{8}$ "	$7\frac{1}{8}$ "	$2\frac{5}{8}$ "	$2\frac{1}{4}$ "	$10\frac{1}{2}$ "	$17\frac{1}{2}$ "	2"	$\frac{15}{16}$ "
$4\frac{1}{4}$ "	$7\frac{1}{4}$ "	$2\frac{3}{4}$ "	$2\frac{1}{2}$ "	10"	18"	$2\frac{1}{8}$ "	$\frac{15}{16}$ "
$4\frac{3}{8}$ "	$7\frac{3}{8}$ "	$2\frac{7}{8}$ "	$2\frac{3}{4}$ "	11"	$18\frac{1}{4}$ "	$2\frac{1}{4}$ "	$\frac{15}{16}$ "
$4\frac{1}{2}$ "	$8\frac{1}{2}$ "	$3\frac{1}{8}$ "	$2\frac{3}{4}$ "	$11\frac{1}{4}$ "	$19\frac{1}{4}$ "	$2\frac{1}{4}$ "	$\frac{15}{16}$ "
$5\frac{1}{8}$ "	$9\frac{1}{8}$ "	$3\frac{1}{4}$ "	$2\frac{7}{8}$ "	11"	$19\frac{1}{2}$ "	$2\frac{1}{4}$ "	$\frac{15}{16}$ "
$5\frac{1}{4}$ "	$9\frac{1}{4}$ "	$3\frac{3}{8}$ "	$3\frac{1}{8}$ "	12"	20"	$2\frac{1}{4}$ "	$\frac{15}{16}$ "
$5\frac{3}{8}$ "	$9\frac{3}{8}$ "	$3\frac{1}{2}$ "	$3\frac{1}{4}$ "

ROUND HEAD BOLTS.



A	B	C	D	E	F	G	H	I	J	K	L	No. of Threads.	Size of Split Pin.	Dis. of Bot. of Thread.	Area at Bot. of Thread.
1	1/2	1/2	1/2	1/2	1/2	1/2	1/2	1/2	1/2	1/2	1/2	12	1"	.400	.1248
1	1/2	1/2	1/2	1/2	1/2	1/2	1/2	1/2	1/2	1/2	1/2	11	1"	.507	.2005
1	1/2	1/2	1/2	1/2	1/2	1/2	1/2	1/2	1/2	1/2	1/2	10	1"	.620	.2998
1	1/2	1/2	1/2	1/2	1/2	1/2	1/2	1/2	1/2	1/2	1/2	9	1"	.731	.4168
1	1/2	1/2	1/2	1/2	1/2	1/2	1/2	1/2	1/2	1/2	1/2	8	1"	.837	.5465
1	1/2	1/2	1/2	1/2	1/2	1/2	1/2	1/2	1/2	1/2	1/2	7	1"	.940	.6892
1	1/2	1/2	1/2	1/2	1/2	1/2	1/2	1/2	1/2	1/2	1/2	6	1"	1.065	.8847
1	1/2	1/2	1/2	1/2	1/2	1/2	1/2	1/2	1/2	1/2	1/2	6	1"	1.160	1.049
1	1/2	1/2	1/2	1/2	1/2	1/2	1/2	1/2	1/2	1/2	1/2	6	1"	1.284	1.285
1	1/2	1/2	1/2	1/2	1/2	1/2	1/2	1/2	1/2	1/2	1/2	5 1/2	1"	1.389	1.505
1	1/2	1/2	1/2	1/2	1/2	1/2	1/2	1/2	1/2	1/2	1/2	5 1/2	1"	1.491	1.734
1	1/2	1/2	1/2	1/2	1/2	1/2	1/2	1/2	1/2	1/2	1/2	5	1"	1.616	2.037
2	3/4	3/4	3/4	3/4	3/4	3/4	3/4	3/4	3/4	3/4	3/4	4 1/2	1"	1.712	2.286
2	3/4	3/4	3/4	3/4	3/4	3/4	3/4	3/4	3/4	3/4	3/4	4 1/2	1"	1.962	3.003
2	3/4	3/4	3/4	3/4	3/4	3/4	3/4	3/4	3/4	3/4	3/4	4	1"	2.176	3.696
2	3/4	3/4	3/4	3/4	3/4	3/4	3/4	3/4	3/4	3/4	3/4	4	1"	2.426	4.591
2	3/4	3/4	3/4	3/4	3/4	3/4	3/4	3/4	3/4	3/4	3/4	4	1"	2.629	5.391
3	1	1	1	1	1	1	1	1	1	1	1	4	1"	2.879	6.465
3	1	1	1	1	1	1	1	1	1	1	1	4	1"	3.100	7.496
3	1	1	1	1	1	1	1	1	1	1	1	4	1"	3.317	8.582
4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	4	1"	3.567	9.922

STANDARD UPSET, COTTERED AND TEE BOLT ENDS.

Diameter of Bolt.	SEE NOTE 	Extra Length of Bar for 1 Inch of Upset.									
D	A		B	C	E	F	G	H	J	K	L
$\frac{1}{32}$	$\frac{3}{4}$	$1\frac{1}{4}$	$\frac{3}{4}$	$\frac{1}{8}$	$1\frac{1}{8}$	$\frac{9}{16}$	$\frac{5}{8}$	$1\frac{1}{8}$	$\frac{3}{4}$	$\frac{9}{16}$	$1\frac{1}{8}$
$\frac{1}{16}$	$\frac{7}{8}$	1	$1\frac{1}{8}$	$\frac{1}{16}$	$1\frac{7}{8}$	$\frac{11}{16}$	$\frac{7}{8}$	$1\frac{1}{8}$	$\frac{1}{2}$	$\frac{11}{16}$	$1\frac{3}{8}$
$\frac{3}{32}$	1	$1\frac{1}{4}$	$1\frac{1}{8}$	$\frac{3}{16}$	$2\frac{1}{4}$	$\frac{13}{16}$	1	$1\frac{1}{8}$	$1\frac{1}{8}$	$1\frac{1}{8}$	$1\frac{5}{8}$
$\frac{1}{8}$	$1\frac{1}{4}$	$1\frac{3}{8}$	$1\frac{1}{4}$	$\frac{1}{2}$	$2\frac{5}{8}$	$\frac{15}{16}$	$1\frac{1}{8}$	$1\frac{3}{8}$	$1\frac{5}{8}$	1	2
$\frac{1}{4}$	$1\frac{5}{8}$	$1\frac{7}{8}$	$1\frac{3}{8}$	$\frac{5}{8}$	3	$1\frac{1}{4}$	$1\frac{1}{8}$	$1\frac{1}{2}$	$1\frac{3}{4}$	$1\frac{1}{4}$	$2\frac{1}{4}$
$\frac{5}{16}$	$1\frac{7}{8}$	2	2	$\frac{7}{8}$	$3\frac{3}{8}$	$1\frac{3}{8}$	$1\frac{3}{8}$	$1\frac{3}{4}$	$1\frac{7}{8}$	$1\frac{3}{8}$	$2\frac{3}{4}$
$\frac{3}{8}$	2	$2\frac{1}{8}$	$2\frac{1}{8}$	$\frac{7}{8}$	$3\frac{7}{8}$	$1\frac{5}{8}$	$1\frac{3}{4}$	$1\frac{7}{8}$	$2\frac{1}{8}$	$1\frac{1}{2}$	3
$\frac{7}{16}$	$2\frac{1}{4}$	$2\frac{3}{8}$	$2\frac{1}{4}$	$\frac{7}{8}$	$4\frac{1}{8}$	$1\frac{7}{8}$	$1\frac{7}{8}$	2	$2\frac{1}{4}$	$1\frac{5}{8}$	$3\frac{1}{4}$
$\frac{1}{2}$	$2\frac{3}{4}$	$2\frac{7}{8}$	$2\frac{3}{4}$	$\frac{7}{8}$	$4\frac{7}{8}$	2	2	$2\frac{1}{8}$	$2\frac{7}{8}$	$1\frac{3}{4}$	$3\frac{1}{2}$
$\frac{9}{16}$	3	$3\frac{1}{8}$	$3\frac{1}{8}$	$\frac{7}{8}$	$5\frac{1}{8}$	$2\frac{1}{8}$	$2\frac{1}{8}$	$2\frac{3}{8}$	3	$1\frac{7}{8}$	$3\frac{3}{4}$
$\frac{5}{8}$	$3\frac{1}{4}$	$3\frac{3}{8}$	$3\frac{1}{4}$	$\frac{7}{8}$	$5\frac{5}{8}$	$2\frac{3}{8}$	$2\frac{3}{8}$	$2\frac{5}{8}$	$3\frac{1}{8}$	2	4
$\frac{3}{4}$	$3\frac{3}{4}$	$3\frac{7}{8}$	$3\frac{3}{4}$	$\frac{7}{8}$	6	$2\frac{5}{8}$	$2\frac{5}{8}$	$2\frac{7}{8}$	$3\frac{3}{8}$	$2\frac{1}{8}$	$4\frac{1}{4}$
$\frac{7}{8}$	4	$4\frac{1}{8}$	$4\frac{1}{8}$	$\frac{7}{8}$	$6\frac{3}{4}$	$2\frac{7}{8}$	$3\frac{1}{8}$	3	$3\frac{5}{8}$	$2\frac{3}{8}$	$4\frac{3}{4}$
1	$4\frac{1}{4}$	$4\frac{3}{8}$	$4\frac{1}{4}$	$\frac{7}{8}$	$7\frac{1}{8}$	3	$3\frac{1}{8}$	$3\frac{1}{4}$	4	$2\frac{5}{8}$	$5\frac{1}{4}$
$1\frac{1}{8}$	$4\frac{3}{4}$	$4\frac{7}{8}$	$4\frac{3}{4}$	$\frac{7}{8}$	$8\frac{1}{4}$	$3\frac{1}{4}$	$3\frac{3}{4}$	$3\frac{3}{4}$	$4\frac{1}{8}$	$2\frac{7}{8}$	$5\frac{3}{4}$
$1\frac{1}{4}$	5	$5\frac{1}{8}$	$5\frac{1}{8}$	$\frac{7}{8}$	9	$3\frac{3}{8}$	4	$4\frac{1}{8}$	$4\frac{1}{2}$	$3\frac{1}{2}$	$6\frac{1}{4}$
$1\frac{3}{8}$	$5\frac{1}{4}$	$5\frac{3}{8}$	$5\frac{1}{4}$	$\frac{7}{8}$	$9\frac{3}{4}$	$3\frac{5}{8}$	$4\frac{1}{4}$	$4\frac{1}{2}$	$4\frac{3}{4}$	$3\frac{3}{4}$	7
$1\frac{1}{2}$	$5\frac{3}{4}$	$5\frac{7}{8}$	$5\frac{3}{4}$	$\frac{7}{8}$	10	$3\frac{7}{8}$	$4\frac{3}{4}$	$4\frac{3}{4}$	$5\frac{1}{4}$	$3\frac{7}{8}$	$7\frac{1}{2}$
$1\frac{5}{8}$	6	$6\frac{1}{8}$	6	$\frac{7}{8}$	$10\frac{1}{2}$	4	5	$5\frac{1}{4}$	$5\frac{5}{8}$	4	8
$1\frac{3}{4}$	$6\frac{1}{4}$	$6\frac{3}{8}$	$6\frac{1}{4}$	$\frac{7}{8}$	$11\frac{1}{4}$	$4\frac{1}{8}$	$5\frac{1}{4}$	$5\frac{1}{4}$	6	$4\frac{1}{2}$	$8\frac{1}{2}$
$1\frac{7}{8}$	$6\frac{3}{4}$	$6\frac{5}{8}$	$6\frac{3}{4}$	$\frac{7}{8}$	12	$4\frac{3}{8}$	$5\frac{3}{8}$	$5\frac{3}{8}$	$6\frac{3}{8}$	$4\frac{3}{4}$	9
2	7	$7\frac{1}{8}$	7	$\frac{7}{8}$	$12\frac{3}{4}$	$4\frac{5}{8}$	$5\frac{5}{8}$	$5\frac{5}{8}$	$6\frac{5}{8}$	$4\frac{7}{8}$	$9\frac{1}{2}$
$2\frac{1}{8}$	$7\frac{1}{4}$	$7\frac{3}{8}$	$7\frac{1}{4}$	$\frac{7}{8}$	$13\frac{1}{4}$	$4\frac{7}{8}$	6	$6\frac{1}{4}$	$7\frac{1}{8}$	5	10
$2\frac{1}{4}$	$7\frac{3}{8}$	$7\frac{5}{8}$	$7\frac{3}{8}$	$\frac{7}{8}$	$13\frac{3}{4}$	5	$6\frac{1}{2}$	$6\frac{1}{2}$	$7\frac{3}{4}$	$5\frac{1}{4}$	$10\frac{1}{2}$
$2\frac{3}{8}$	$7\frac{1}{2}$	$7\frac{7}{8}$	$7\frac{3}{8}$	$\frac{7}{8}$	$14\frac{1}{4}$	$5\frac{1}{8}$	$6\frac{3}{8}$	$6\frac{3}{8}$	$7\frac{7}{8}$	$5\frac{3}{4}$	11
$2\frac{1}{2}$	$7\frac{5}{8}$	$8\frac{1}{8}$	$7\frac{5}{8}$	$\frac{7}{8}$	15	$5\frac{3}{8}$	$6\frac{5}{8}$	$6\frac{5}{8}$	$8\frac{1}{4}$	$5\frac{3}{4}$	$11\frac{1}{2}$
$2\frac{5}{8}$	8	$8\frac{3}{8}$	8	$\frac{7}{8}$	$15\frac{1}{2}$	$5\frac{5}{8}$	$6\frac{7}{8}$	$7\frac{1}{8}$	$8\frac{3}{8}$	6	12
$2\frac{3}{4}$	$8\frac{1}{4}$	$8\frac{5}{8}$	$8\frac{1}{4}$	$\frac{7}{8}$	$16\frac{1}{2}$	$5\frac{7}{8}$	$7\frac{1}{4}$	$7\frac{1}{4}$	9	$6\frac{1}{4}$	$12\frac{1}{2}$
3	$8\frac{3}{4}$	$9\frac{1}{8}$	$8\frac{3}{4}$	$\frac{7}{8}$	$17\frac{1}{4}$	6	$7\frac{1}{2}$	$7\frac{1}{2}$			
$3\frac{1}{8}$	9	$9\frac{3}{8}$	9	$\frac{7}{8}$	18						

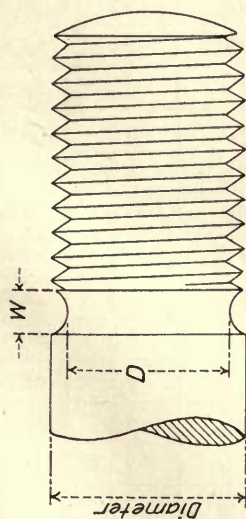
NOTE.—The upset diameter A gives an area at the root of the thread about 20% in excess of D, to allow for the reduced strength caused by upsetting.

NOTE.—Up to 2" diameter the cottered ends have a tensile strength practically equal to the bolts. For larger sizes the ends given have from 10% to 20% less strength than the bolts, and upset ends must be used for full strength.

EXTRA STOCK REQUIRED FOR UPSETTING SCREW ENDS

Giving extra length, in inches, of rod required to make various upsets for screw ends.							
Length of Upset.							
From	To	1 inch	2 inch	3 inch	4 inch	5 inch	6 inch
$\frac{3}{4}$	$\frac{7}{8}$	0.36	0.72	1.08	1.44	1.81	2.17
$\frac{3}{4}$	1	0.78	1.56	2.33	3.11	3.89	4.67
$\frac{3}{4}$	$1\frac{1}{8}$	1.25	2.50	3.75	5.00	6.25	7.50
$\frac{7}{8}$	1	0.31	0.61	0.92	1.22	1.53	1.84
$\frac{7}{8}$	$1\frac{1}{8}$	0.65	1.31	1.96	2.61	3.27	3.92
$\frac{7}{8}$	$1\frac{1}{4}$	1.04	2.08	3.12	4.16	5.20	6.25
1	$1\frac{1}{8}$	0.27	0.53	0.80	1.06	1.33	1.59
1	$1\frac{1}{4}$	0.56	1.13	1.69	2.25	2.81	3.38
1	$1\frac{3}{8}$	0.89	1.78	2.67	3.56	4.45	5.34
$1\frac{1}{8}$	$1\frac{1}{4}$	0.23	0.47	0.70	0.94	1.17	1.41
$1\frac{1}{8}$	$1\frac{3}{8}$	0.49	0.99	1.48	1.98	2.47	2.96
$1\frac{1}{8}$	$1\frac{1}{2}$	0.78	1.56	2.33	3.11	3.89	4.67
$1\frac{1}{4}$	$1\frac{3}{8}$	0.21	0.42	0.63	0.84	1.05	1.26
$1\frac{1}{4}$	$1\frac{1}{2}$	0.44	0.88	1.32	1.76	2.20	2.64
$1\frac{1}{2}$	$1\frac{5}{8}$	0.69	1.38	2.07	2.76	3.45	4.14
$1\frac{3}{8}$	$1\frac{1}{2}$	0.19	0.38	0.57	0.76	0.95	1.14
$1\frac{3}{8}$	$1\frac{5}{8}$	0.40	0.79	1.19	1.59	1.98	2.38
$1\frac{3}{8}$	$1\frac{3}{4}$	0.62	1.24	1.86	2.48	3.10	3.72
$1\frac{1}{2}$	$1\frac{5}{8}$	0.17	0.35	0.52	0.69	0.87	1.04
$1\frac{1}{2}$	$1\frac{3}{4}$	0.36	0.72	1.08	1.44	1.81	2.17
$1\frac{1}{2}$	$1\frac{7}{8}$	0.56	1.13	1.69	2.25	2.81	3.38
$1\frac{5}{8}$	$1\frac{3}{4}$	0.16	0.32	0.48	0.64	0.80	0.96
$1\frac{5}{8}$	$1\frac{7}{8}$	0.33	0.66	0.99	1.33	1.66	1.99
$1\frac{5}{8}$	2	0.51	1.03	1.54	2.06	2.57	3.09
$1\frac{3}{4}$	$1\frac{7}{8}$	0.15	0.30	0.44	0.59	0.74	0.89
$1\frac{3}{4}$	2	0.31	0.61	0.92	1.22	1.53	1.84
$1\frac{3}{4}$	$2\frac{1}{8}$	0.47	0.95	1.42	1.90	2.37	2.85

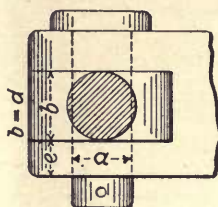
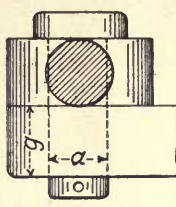
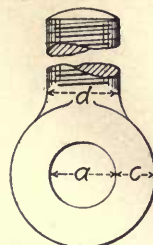
DIMENSIONS FOR ENDS OF SCREWS AND STUDS



Neck	D	End Radius	Diameter	1	1 1/8	1 1/4	1 1/2	1 3/4	2	2 1/4	2 1/2	2 3/4	3	3 1/4	3 1/2	3 3/4	4	
				15/16	7/8	13/16	27/32	1 1/16	1 1/8	1 1/4	1 1/2	1 3/4	2	2 1/4	2 1/2	2 3/4	3	3 1/4
Neck	D	End Radius	Diameter	1 1/16	1 1/8	1 1/4	1 1/2	1 3/4	2	2 1/4	2 1/2	2 3/4	3	3 1/4	3 1/2	3 3/4	4	4 1/4
				1 1/16	1 1/8	1 1/4	1 1/2	1 3/4	2	2 1/4	2 1/2	2 3/4	3	3 1/4	3 1/2	3 3/4	4	4 1/4
Neck	D	End Radius	Diameter	1 1/8	1 1/4	1 1/2	1 3/4	2	2 1/4	2 1/2	2 3/4	3	3 1/4	3 1/2	3 3/4	4	4 1/4	4 1/2
				1 1/8	1 1/4	1 1/2	1 3/4	2	2 1/4	2 1/2	2 3/4	3	3 1/4	3 1/2	3 3/4	4	4 1/4	4 1/2
Neck	D	End Radius	Diameter	1 1/4	1 1/2	1 3/4	2	2 1/4	2 1/2	2 3/4	3	3 1/4	3 1/2	3 3/4	4	4 1/4	4 1/2	4 3/4
				1 1/4	1 1/2	1 3/4	2	2 1/4	2 1/2	2 3/4	3	3 1/4	3 1/2	3 3/4	4	4 1/4	4 1/2	4 3/4
Neck	D	End Radius	Diameter	1 1/2	1 3/4	2	2 1/4	2 1/2	2 3/4	3	3 1/4	3 1/2	3 3/4	4	4 1/4	4 1/2	4 3/4	5
				1 1/2	1 3/4	2	2 1/4	2 1/2	2 3/4	3	3 1/4	3 1/2	3 3/4	4	4 1/4	4 1/2	4 3/4	5
Neck	D	End Radius	Diameter	1 3/4	2	2 1/4	2 1/2	2 3/4	3	3 1/4	3 1/2	3 3/4	4	4 1/4	4 1/2	4 3/4	5	5 1/4
				1 3/4	2	2 1/4	2 1/2	2 3/4	3	3 1/4	3 1/2	3 3/4	4	4 1/4	4 1/2	4 3/4	5	5 1/4
Neck	D	End Radius	Diameter	2	2 1/4	2 1/2	2 3/4	3	3 1/4	3 1/2	3 3/4	4	4 1/4	4 1/2	4 3/4	5	5 1/4	5 1/2
				2	2 1/4	2 1/2	2 3/4	3	3 1/4	3 1/2	3 3/4	4	4 1/4	4 1/2	4 3/4	5	5 1/4	5 1/2
Neck	D	End Radius	Diameter	2 1/4	2 1/2	2 3/4	3	3 1/4	3 1/2	3 3/4	4	4 1/4	4 1/2	4 3/4	5	5 1/4	5 1/2	5 3/4
				2 1/4	2 1/2	2 3/4	3	3 1/4	3 1/2	3 3/4	4	4 1/4	4 1/2	4 3/4	5	5 1/4	5 1/2	5 3/4
Neck	D	End Radius	Diameter	2 1/2	2 3/4	3	3 1/4	3 1/2	3 3/4	4	4 1/4	4 1/2	4 3/4	5	5 1/4	5 1/2	5 3/4	6
				2 1/2	2 3/4	3	3 1/4	3 1/2	3 3/4	4	4 1/4	4 1/2	4 3/4	5	5 1/4	5 1/2	5 3/4	6
Neck	D	End Radius	Diameter	2 3/4	3	3 1/4	3 1/2	3 3/4	4	4 1/4	4 1/2	4 3/4	5	5 1/4	5 1/2	5 3/4	6	6 1/4
				2 3/4	3	3 1/4	3 1/2	3 3/4	4	4 1/4	4 1/2	4 3/4	5	5 1/4	5 1/2	5 3/4	6	6 1/4
Neck	D	End Radius	Diameter	3	3 1/4	3 1/2	3 3/4	4	4 1/4	4 1/2	4 3/4	5	5 1/4	5 1/2	5 3/4	6	6 1/4	6 1/2
				3	3 1/4	3 1/2	3 3/4	4	4 1/4	4 1/2	4 3/4	5	5 1/4	5 1/2	5 3/4	6	6 1/4	6 1/2
Neck	D	End Radius	Diameter	3 1/4	3 1/2	3 3/4	4	4 1/4	4 1/2	4 3/4	5	5 1/4	5 1/2	5 3/4	6	6 1/4	6 1/2	6 3/4
				3 1/4	3 1/2	3 3/4	4	4 1/4	4 1/2	4 3/4	5	5 1/4	5 1/2	5 3/4	6	6 1/4	6 1/2	6 3/4
Neck	D	End Radius	Diameter	3 1/2	3 3/4	4	4 1/4	4 1/2	4 3/4	5	5 1/4	5 1/2	5 3/4	6	6 1/4	6 1/2	6 3/4	7
				3 1/2	3 3/4	4	4 1/4	4 1/2	4 3/4	5	5 1/4	5 1/2	5 3/4	6	6 1/4	6 1/2	6 3/4	7
Neck	D	End Radius	Diameter	3 3/4	4	4 1/4	4 1/2	4 3/4	5	5 1/4	5 1/2	5 3/4	6	6 1/4	6 1/2	6 3/4	7	7 1/4
				3 3/4	4	4 1/4	4 1/2	4 3/4	5	5 1/4	5 1/2	5 3/4	6	6 1/4	6 1/2	6 3/4	7	7 1/4
Neck	D	End Radius	Diameter	4	4 1/4	4 1/2	4 3/4	5	5 1/4	5 1/2	5 3/4	6	6 1/4	6 1/2	6 3/4	7	7 1/4	7 1/2
				4	4 1/4	4 1/2	4 3/4	5	5 1/4	5 1/2	5 3/4	6	6 1/4	6 1/2	6 3/4	7	7 1/4	7 1/2
Neck	D	End Radius	Diameter	4 1/4	4 1/2	4 3/4	5	5 1/4	5 1/2	5 3/4	6	6 1/4	6 1/2	6 3/4	7	7 1/4	7 1/2	7 3/4
				4 1/4	4 1/2	4 3/4	5	5 1/4	5 1/2	5 3/4	6	6 1/4	6 1/2	6 3/4	7	7 1/4	7 1/2	7 3/4
Neck	D	End Radius	Diameter	4 1/2	4 3/4	5	5 1/4	5 1/2	5 3/4	6	6 1/4	6 1/2	6 3/4	7	7 1/4	7 1/2	7 3/4	8
				4 1/2	4 3/4	5	5 1/4	5 1/2	5 3/4	6	6 1/4	6 1/2	6 3/4	7	7 1/4	7 1/2	7 3/4	8
Neck	D	End Radius	Diameter	4 3/4	5	5 1/4	5 1/2	5 3/4	6	6 1/4	6 1/2	6 3/4	7	7 1/4	7 1/2	7 3/4	8	8 1/4
				4 3/4	5	5 1/4	5 1/2	5 3/4	6	6 1/4	6 1/2	6 3/4	7	7 1/4	7 1/2	7 3/4	8	8 1/4
Neck	D	End Radius	Diameter	5	5 1/4	5 1/2	5 3/4	6	6 1/4	6 1/2	6 3/4	7	7 1/4	7 1/2	7 3/4	8	8 1/4	8 1/2
				5	5 1/4	5 1/2	5 3/4	6	6 1/4	6 1/2	6 3/4	7	7 1/4	7 1/2	7 3/4	8	8 1/4	8 1/2
Neck	D	End Radius	Diameter	5 1/4	5 1/2	5 3/4	6	6 1/4	6 1/2	6 3/4	7	7 1/4	7 1/2	7 3/4	8	8 1/4	8 1/2	8 3/4
				5 1/4	5 1/2	5 3/4	6	6 1/4	6 1/2	6 3/4	7	7 1/4	7 1/2	7 3/4	8	8 1/4	8 1/2	8 3/4
Neck	D	End Radius	Diameter	5 1/2	5 3/4	6	6 1/4	6 1/2	6 3/4	7	7 1/4	7 1/2	7 3/4	8	8 1/4	8 1/2	8 3/4	9
				5 1/2	5 3/4	6	6 1/4	6 1/2	6 3/4	7	7 1/4	7 1/2	7 3/4	8	8 1/4	8 1/2	8 3/4	9
Neck	D	End Radius	Diameter	5 3/4	6	6 1/4	6 1/2	6 3/4	7	7 1/4	7 1/2	7 3/4	8	8 1/4	8 1/2	8 3/4	9	9 1/4
				5 3/4	6	6 1/4	6 1/2	6 3/4	7	7 1/4	7 1/2	7 3/4	8	8 1/4	8 1/2	8 3/4	9	9 1/4
Neck	D	End Radius	Diameter	6	6 1/4	6 1/2	6 3/4	7	7 1/4	7 1/2	7 3/4	8	8 1/4	8 1/2	8 3/4	9	9 1/4	9 1/2
				6	6 1/4	6 1/2	6 3/4	7	7 1/4	7 1/2	7 3/4	8	8 1/4	8 1/2	8 3/4	9	9 1/4	9 1/2
Neck	D	End Radius	Diameter	6 1/4	6 1/2	6 3/4	7	7 1/4	7 1/2	7 3/4	8	8 1/4	8 1/2	8 3/4	9	9 1/4	9 1/2	9 3/4
				6 1/4	6 1/2	6 3/4	7	7 1/4	7 1/2	7 3/4	8	8 1/4	8 1/2	8 3/4	9	9 1/4	9 1/2	9 3/4
Neck	D	End Radius	Diameter	6 1/2	6 3/4	7	7 1/4	7 1/2	7 3/4	8	8 1/4	8 1/2	8 3/4	9	9 1/4	9 1/2	9 3/4	10
				6 1/2	6 3/4	7	7 1/4	7 1/2	7 3/4	8	8 1/4	8 1/2	8 3/4	9	9 1/4	9 1/2	9 3/4	10
Neck	D	End Radius	Diameter	6 3/4	7	7 1/4	7 1/2	7 3/4	8	8 1/4	8 1/2	8 3/4	9	9 1/4	9 1/2	9 3/4	10	10 1/4
				6 3/4	7	7 1/4	7 1/2	7 3/4	8	8 1/4	8 1/2	8 3/4	9	9 1/4	9 1/2	9 3/4	10	10 1/4
Neck	D	End Radius	Diameter	7	7 1/4	7 1/2	7 3/4	8	8 1/4	8 1/2	8 3/4	9	9 1/4	9 1/2	9 3/4	10	10 1/4	10 1/2
				7	7 1/4	7 1/2	7 3/4	8	8 1/4	8 1/2	8 3/4	9	9 1/4	9 1/2	9 3/4	10	10 1/4	10 1/2
Neck	D	End Radius	Diameter	7 1/4	7 1/2	7 3/4	8	8 1/4	8 1/2	8 3/4	9	9 1/4	9 1/2	9 3/4	10	10 1/4	10 1/2	10 3/4
				7 1/4	7 1/2	7 3/4	8	8 1/4	8 1/2	8 3/4	9	9 1/4	9 1/2	9 3/4	10	10 1/4	10 1/2	10 3/4
Neck	D	End Radius	Diameter	7 1/2	7 3/4	8	8 1/4	8 1/2	8 3/4	9	9 1/4	9 1/2	9 3/4	10	10 1/4	10 1/2	10 3/4	11
				7 1/2	7 3/4	8	8 1/4	8 1/2	8 3/4	9	9 1/4	9 1/2	9 3/4	10	10 1/4	10 1/2	10 3/4	11
Neck	D	End Radius	Diameter	7 3/4	8	8 1/4	8 1/2	8 3/4	9	9 1/4	9 1/2	9 3/4	10	10 1/4	10 1/2	10 3/4	11	11 1/4
				7 3/4	8	8 1/4	8 1/2	8 3/4	9	9 1/4	9 1/2	9 3/4	10	10 1/4	10 1/2	10 3/4	11	11 1/4
Neck	D	End Radius	Diameter	8	8 1/4	8 1/2	8 3/4	9	9 1/4	9 1/2	9 3/4	10	10 1/4	10 1/2	10 3/4	11	11 1/4	11 1/2
				8	8 1/4	8 1/2	8 3/4	9	9 1/4	9 1/2	9 3/4	10	10 1/4	10 1/2	10 3/4	11	11 1/4	11 1/2
Neck	D	End Radius	Diameter	8 1/4	8 1/2	8 3/4	9	9 1/4	9 1/2	9 3/4	10	10 1/4	10 1/2	10 3/4	11	11 1/4	11 1/2	11 3/4
				8 1/4	8 1/2	8 3/4	9	9 1/4	9 1/2	9 3/4	10	10 1/4	10 1/2	10 3/4	11	11 1/4	11 1/2	11 3/4
Neck	D	End Radius	Diameter	8 1/2	8 3/4	9	9 1/4	9 1/2	9 3/4	10	10 1/4	10 1/2	10 3/4	11	11 1/4	11 1/2	11 3/4	12
				8 1/2	8 3/4	9	9 1/4	9 1/2	9 3/4	10	10 1/4	10 1/2	10 3/4	11	11 1/4	11 1/2	11 3/4	12
Neck	D	End Radius	Diameter	8 3/4	9	9 1/4	9 1/2	9 3/4	10	10 1/4	10 1/2	10 3/4	11	11 1/4	11 1/2	11 3/4	12	12 1/4
				8 3/4	9	9 1/4	9 1/2	9 3/4	10	10 1/4	10 1/2	10 3/4	11	11 1/4	11 1/2	11 3/4	12	12 1/4
Neck	D	End Radius	Diameter	9	9 1/4	9 1/2	9 3/4	10	10 1/4	10 1/2	10 3/4	11	11 1/4	11 1/2	11 3/4	12	12 1/4	12 1/2
				9	9 1/4	9 1/2	9 3/4	10	10 1/4	10 1/2	10 3/4	11	11 1/4	11 1/2	11 3/4	12	12 1/4	12 1/2
Neck	D	End Radius	Diameter	9 1/4	9 1/2	9 3/4	10	10 1/4	10 1/2	10 3/4	11	11 1/4	11 1/2	11 3/4	12	12 1/4	12 1/2	12 3/4
				9 1/4	9 1/2	9 3/4	10	10 1/4	10 1/2	10 3/4	11	11 1/4	11 1/2	11 3/4	12	12 1/4	12 1/2	12 3/4
Neck	D	End Radius	Diameter	9 1/2	9 3/4	10	10 1/4	10 1/2	10 3/4	11	11 1/4	11 1/2	11 3/4	12	12 1/4	12 1/2	12 3/4	13
				9 1/2	9 3/4	10	10 1/4	10 1/2	10 3/4	11	11 1/4	11 1/2	11 3/4	12	12 1/4	12 1/2	12 3/4	13
Neck	D	End Radius	Diameter	9 3/4	10	10 1/4	10 1/2	10 3/4	1									

EYEBOLTS AND PINS

Proportions of Eyebolts.

Pin in Double
Shear.Pin in Single
Shear.

Eyebolt.

U. S. Threads per Inch	d , = Diam. of Bolt	a , in Double Shear	a , in Single Shear	c	e	g	Safe Load in lbs.
13	$\frac{1}{2}$	$\frac{13}{32}$	$\frac{9}{16}$	$\frac{1}{4}$	$\frac{5}{8}$	$\frac{1}{4}$	1,890
11	$\frac{5}{8}$	$\frac{1}{2}$	$\frac{11}{16}$	$\frac{5}{16}$	$\frac{13}{16}$	$\frac{5}{8}$	3,030
10	$\frac{3}{4}$	$\frac{19}{32}$	$\frac{13}{16}$	$\frac{3}{8}$	1	2	4,530
9	$\frac{7}{8}$	$\frac{11}{16}$	$\frac{31}{32}$	$\frac{7}{16}$	$\frac{13}{16}$	$2\frac{3}{8}$	6,300
8	1	$\frac{13}{16}$	$\frac{3}{32}$	$\frac{1}{2}$	$1\frac{3}{8}$	$2\frac{3}{4}$	8,250
7	$1\frac{1}{8}$	$\frac{29}{32}$	$\frac{1}{4}$	$\frac{9}{16}$	$1\frac{9}{16}$	$3\frac{1}{8}$	10,410
7	$1\frac{1}{4}$	1	$\frac{1}{8}$	$\frac{5}{8}$	$1\frac{3}{4}$	$3\frac{1}{2}$	13,400
6	$1\frac{3}{8}$	$\frac{13}{32}$	$\frac{1}{2}$	$\frac{11}{16}$	$1\frac{15}{16}$	$3\frac{7}{8}$	15,800
6	$1\frac{1}{2}$	$\frac{1}{4}$	$\frac{21}{32}$	$\frac{3}{4}$	$2\frac{1}{8}$	$4\frac{1}{4}$	19,400
$5\frac{1}{2}$	$1\frac{5}{8}$	$\frac{15}{16}$	$\frac{25}{32}$	$\frac{13}{16}$	$2\frac{5}{16}$	$4\frac{5}{8}$	23,000
5	$1\frac{3}{4}$	$\frac{13}{32}$	$\frac{29}{32}$	$\frac{7}{8}$	$2\frac{1}{2}$	5	26,000
5	$1\frac{7}{8}$	$\frac{1}{2}$	$2\frac{1}{16}$	$\frac{15}{16}$	$2\frac{11}{16}$	$5\frac{3}{8}$	31,000
$4\frac{1}{2}$	2	$\frac{15}{8}$	$2\frac{7}{32}$	1	$2\frac{7}{8}$	$5\frac{3}{4}$	35,000
$4\frac{1}{2}$	$2\frac{1}{8}$	$\frac{23}{32}$	$2\frac{11}{32}$	$\frac{1}{16}$	$3\frac{1}{16}$	$6\frac{1}{8}$	40,000
$4\frac{1}{2}$	$2\frac{1}{4}$	$\frac{13}{16}$	$2\frac{15}{32}$	$\frac{1}{8}$	$3\frac{1}{4}$	$6\frac{1}{2}$	45,000
$4\frac{1}{2}$	$2\frac{3}{8}$	$\frac{29}{32}$	$2\frac{5}{8}$	$\frac{3}{16}$	$3\frac{7}{16}$	$6\frac{7}{8}$	50,500
4	$2\frac{1}{2}$	2	$2\frac{3}{4}$	$\frac{1}{4}$	$3\frac{5}{8}$	$7\frac{1}{4}$	56,000
4	$2\frac{5}{8}$	$2\frac{1}{8}$	$2\frac{7}{8}$	$1\frac{5}{16}$	$3\frac{13}{16}$	$7\frac{5}{8}$	61,500
4	$2\frac{3}{4}$	$2\frac{7}{32}$	$3\frac{1}{32}$	$\frac{1}{8}$	4	8	66,000
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